

# TENNIS ELBOW

A MEDICAL DICTIONARY, BIBLIOGRAPHY,  
AND ANNOTATED RESEARCH GUIDE TO  
INTERNET REFERENCES



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**AND PHILIP M. PARKER, PH.D., EDITORS**

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## FORWARD

In March 2001, the National Institutes of Health issued the following warning: "The number of Web sites offering health-related resources grows every day. Many sites provide valuable information, while others may have information that is unreliable or misleading."<sup>1</sup> Furthermore, because of the rapid increase in Internet-based information, many hours can be wasted searching, selecting, and printing. Since only the smallest fraction of information dealing with tennis elbow is indexed in search engines, such as **www.google.com** or others, a non-systematic approach to Internet research can be not only time consuming, but also incomplete. This book was created for medical professionals, students, and members of the general public who want to know as much as possible about tennis elbow, using the most advanced research tools available and spending the least amount of time doing so.

In addition to offering a structured and comprehensive bibliography, the pages that follow will tell you where and how to find reliable information covering virtually all topics related to tennis elbow, from the essentials to the most advanced areas of research. Public, academic, government, and peer-reviewed research studies are emphasized. Various abstracts are reproduced to give you some of the latest official information available to date on tennis elbow. Abundant guidance is given on how to obtain free-of-charge primary research results via the Internet. **While this book focuses on the field of medicine, when some sources provide access to non-medical information relating to tennis elbow, these are noted in the text.**

E-book and electronic versions of this book are fully interactive with each of the Internet sites mentioned (clicking on a hyperlink automatically opens your browser to the site indicated). If you are using the hard copy version of this book, you can access a cited Web site by typing the provided Web address directly into your Internet browser. You may find it useful to refer to synonyms or related terms when accessing these Internet databases. **NOTE:** At the time of publication, the Web addresses were functional. However, some links may fail due to URL address changes, which is a common occurrence on the Internet.

For readers unfamiliar with the Internet, detailed instructions are offered on how to access electronic resources. For readers unfamiliar with medical terminology, a comprehensive glossary is provided. For readers without access to Internet resources, a directory of medical libraries, that have or can locate references cited here, is given. We hope these resources will prove useful to the widest possible audience seeking information on tennis elbow.

*The Editors*

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<sup>1</sup> From the NIH, National Cancer Institute (NCI): <http://www.cancer.gov/cancerinfo/ten-things-to-know>.



## CHAPTER 1. STUDIES ON TENNIS ELBOW

### Overview

In this chapter, we will show you how to locate peer-reviewed references and studies on tennis elbow.

### The Combined Health Information Database

The Combined Health Information Database summarizes studies across numerous federal agencies. To limit your investigation to research studies and tennis elbow, you will need to use the advanced search options. First, go to <http://chid.nih.gov/index.html>. From there, select the “Detailed Search” option (or go directly to that page with the following hyperlink: <http://chid.nih.gov/detail/detail.html>). The trick in extracting studies is found in the drop boxes at the bottom of the search page where “You may refine your search by.” Select the dates and language you prefer, and the format option “Journal Article.” At the top of the search form, select the number of records you would like to see (we recommend 100) and check the box to display “whole records.” We recommend that you type “tennis elbow” (or synonyms) into the “For these words:” box. Consider using the option “anywhere in record” to make your search as broad as possible. If you want to limit the search to only a particular field, such as the title of the journal, then select this option in the “Search in these fields” drop box. The following is what you can expect from this type of search:

- **Keeping Tennis Elbow at Arm's Length: Simple, Effective Strengthening Exercises**

Source: *The Physician and Sportsmedicine*. 24(5):61-62; May 1996.

Summary: This patient information sheet describes tennis elbow and the types of exercises, with and without weights, that will help one regain strength. Exercise routines are explained, and weight exercises are illustrated. 2 figures.

### Federally Funded Research on Tennis Elbow

The U.S. Government supports a variety of research studies relating to tennis elbow. These studies are tracked by the Office of Extramural Research at the National Institutes of

Health.<sup>2</sup> CRISP (Computerized Retrieval of Information on Scientific Projects) is a searchable database of federally funded biomedical research projects conducted at universities, hospitals, and other institutions.

Search the CRISP Web site at [http://crisp.cit.nih.gov/crisp/crisp\\_query.generate\\_screen](http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen). You will have the option to perform targeted searches by various criteria, including geography, date, and topics related to tennis elbow.

For most of the studies, the agencies reporting into CRISP provide summaries or abstracts. As opposed to clinical trial research using patients, many federally funded studies use animals or simulated models to explore tennis elbow.

## The National Library of Medicine: PubMed

One of the quickest and most comprehensive ways to find academic studies in both English and other languages is to use PubMed, maintained by the National Library of Medicine.<sup>3</sup> The advantage of PubMed over previously mentioned sources is that it covers a greater number of domestic and foreign references. It is also free to use. If the publisher has a Web site that offers full text of its journals, PubMed will provide links to that site, as well as to sites offering other related data. User registration, a subscription fee, or some other type of fee may be required to access the full text of articles in some journals.

To generate your own bibliography of studies dealing with tennis elbow, simply go to the PubMed Web site at <http://www.ncbi.nlm.nih.gov/pubmed>. Type "tennis elbow" (or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for tennis elbow (hyperlinks lead to article summaries):

- **32 cases of tennis elbow treated by the three-needle therapy on the elbow.**  
Author(s): Zhang H.  
Source: J Tradit Chin Med. 1998 September; 18(3): 197-8. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10453613&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10453613&dopt=Abstract)
- **A prospective, randomised study to compare extracorporeal shock-wave therapy and injection of steroid for the treatment of tennis elbow.**  
Author(s): Crowther MA, Bannister GC, Huma H, Rooker GD.  
Source: The Journal of Bone and Joint Surgery. British Volume. 2002 July; 84(5): 678-9.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12188483&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12188483&dopt=Abstract)

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<sup>2</sup> Healthcare projects are funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Healthcare Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH).

<sup>3</sup> PubMed was developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The PubMed database was developed in conjunction with publishers of biomedical literature as a search tool for accessing literature citations and linking to full-text journal articles at Web sites of participating publishers. Publishers that participate in PubMed supply NLM with their citations electronically prior to or at the time of publication.

- **A rational management of tennis elbow.**  
 Author(s): Kamien M.  
 Source: Sports Medicine (Auckland, N.Z.). 1990 March; 9(3): 173-91. Review.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=2180031&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2180031&dopt=Abstract)
- **A re-appraisal of tennis elbow.**  
 Author(s): Uhthoff HK, Sarkar K.  
 Source: Acta Orthop Belg. 1980 January-February; 46(1): 74-82. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=7424515&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7424515&dopt=Abstract)
- **A retrospective study of surgically treated cases of tennis elbow.**  
 Author(s): O'Neil J, Sarkar K, Uhthoff HK.  
 Source: Acta Orthop Belg. 1980 March-April; 46(2): 189-96. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=7457114&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7457114&dopt=Abstract)
- **A simple cure for chronic tennis elbow.**  
 Author(s): White AD.  
 Source: Aust Fam Physician. 1987 July; 16(7): 953. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3662961&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3662961&dopt=Abstract)
- **A simple cure for tennis elbow.**  
 Author(s): White AD.  
 Source: The Medical Journal of Australia. 1985 September 16; 143(6): 266.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=4033518&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4033518&dopt=Abstract)
- **A tennis elbow support.**  
 Author(s): Chen SC.  
 Source: British Medical Journal. 1977 October 1; 2(6091): 894.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=922344&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=922344&dopt=Abstract)
- **Acupuncture for tennis elbow: an E-mail consensus study to define a standardised treatment in a GPs' surgery.**  
 Author(s): Webster-Harrison P, White A, Rae J.  
 Source: Acupuncture in Medicine : Journal of the British Medical Acupuncture Society. 2002 December; 20(4): 181-5.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12512792&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12512792&dopt=Abstract)
- **Acupuncture therapy for tennis elbow.**  
 Author(s): Brattberg G.  
 Source: Pain. 1983 July; 16(3): 285-8.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=6888954&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6888954&dopt=Abstract)

- **An epidemiologic study of tennis elbow. Incidence, recurrence, and effectiveness of prevention strategies.**  
Author(s): Gruchow HW, Pelletier D.  
Source: The American Journal of Sports Medicine. 1979 July-August; 7(4): 234-8.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=474862&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=474862&dopt=Abstract)
- **An epidemiologic study of upper extremity injury in tennis players with a particular reference to tennis elbow.**  
Author(s): Hang YS, Peng SM.  
Source: Taiwan Yi Xue Hui Za Zhi. 1984 March; 83(3): 307-16. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=6588142&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6588142&dopt=Abstract)
- **An epidemiological study of lateral epicondylitis (tennis elbow) in amateur male players.**  
Author(s): Kitai E, Itay S, Ruder A, Engel J, Modan M.  
Source: Ann Chir Main. 1986; 5(2): 113-21. English, French.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3767495&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3767495&dopt=Abstract)
- **Analgesic effect of extracorporeal shock-wave therapy on chronic tennis elbow.**  
Author(s): Rompe JD, Hope C, Kullmer K, Heine J, Burger R.  
Source: The Journal of Bone and Joint Surgery. British Volume. 1996 March; 78(2): 233-7.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=8666632&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8666632&dopt=Abstract)
- **Another cause of tennis elbow.**  
Author(s): Shapiro DH.  
Source: The New England Journal of Medicine. 1990 November 15; 323(20): 1428.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=2233915&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2233915&dopt=Abstract)
- **Anyone for tennis elbow?**  
Author(s): Trethowan N.  
Source: Occup Health (Lond). 1986 March; 38(3): 74-5. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3635002&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3635002&dopt=Abstract)
- **Assessment of tennis elbow using the Marcy Wedge-Pro.**  
Author(s): Smith RW, Mani R, Cawley MI, Englisch W, Eckenberger P.  
Source: British Journal of Sports Medicine. 1993 December; 27(4): 233-6.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=8130959&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8130959&dopt=Abstract)

- **Associations between pain, grip strength, and manual tests in the treatment evaluation of chronic tennis elbow.**  
 Author(s): Pienimaki T, Tarvainen T, Siira P, Malmivaara A, Vanharanta H.  
 Source: The Clinical Journal of Pain. 2002 May-June; 18(3): 164-70.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12048418&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12048418&dopt=Abstract)
- **Bilaterally decreased motor performance of arms in patients with chronic tennis elbow.**  
 Author(s): Pienimaki TT, Kauranen K, Vanharanta H.  
 Source: Archives of Physical Medicine and Rehabilitation. 1997 October; 78(10): 1092-5.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9339158&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9339158&dopt=Abstract)
- **Bony changes at the lateral epicondyle of possible significance in tennis elbow syndrome.**  
 Author(s): Edelson G, Kunos CA, Vigder F, Obed E.  
 Source: Journal of Shoulder and Elbow Surgery / American Shoulder and Elbow Surgeons. [et Al.]. 2001 March-April; 10(2): 158-63.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=11307080&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11307080&dopt=Abstract)
- **Botulinum toxin injection versus surgical treatment for tennis elbow: a randomized pilot study.**  
 Author(s): Keizer SB, Rutten HP, Pilot P, Morre HH, v Os JJ, Verburg AD.  
 Source: Clinical Orthopaedics and Related Research. 2002 August; (401): 125-31.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12151889&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12151889&dopt=Abstract)
- **Can stroke modification relieve tennis elbow?**  
 Author(s): Ilfeld FW.  
 Source: Clinical Orthopaedics and Related Research. 1992 March; (276): 182-6.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=1537149&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1537149&dopt=Abstract)
- **Chronic obscure groin pain is commonly caused by enthesopathy: 'tennis elbow' of the groin.**  
 Author(s): Ashby EC.  
 Source: The British Journal of Surgery. 1994 November; 81(11): 1632-4.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=7827891&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7827891&dopt=Abstract)
- **Comparison of diflunisal and naproxen in the treatment of tennis elbow.**  
 Author(s): Stull PA, Jokl P.  
 Source: Clinical Therapeutics. 1986; 9 Suppl C: 62-6.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3548987&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3548987&dopt=Abstract)

- **Comparison of the effectiveness between manual acupuncture and electro-acupuncture on patients with tennis elbow.**  
Author(s): Tsui P, Leung MC.  
Source: Acupuncture & Electro-Therapeutics Research. 2002; 27(2): 107-17.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12269719&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12269719&dopt=Abstract)
- **Comparison of two steroid preparations used to treat tennis elbow, using the hypospray.**  
Author(s): Clarke AK, Woodland J.  
Source: Rheumatol Rehabil. 1975 February; 14(1): 47-9.  
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[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=7712554&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7712554&dopt=Abstract)
- **The prevalence and causation of tennis elbow (lateral humeral epicondylitis) in a population of workers in an engineering industry.**  
Author(s): Dimberg L.  
Source: Ergonomics. 1987 March; 30(3): 573-9.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3595554&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3595554&dopt=Abstract)
- **The treatment of tennis elbow with triamcinolone acetonide.**  
Author(s): Nevelos AB.  
Source: Current Medical Research and Opinion. 1980; 6(7): 507-9.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=7363650&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7363650&dopt=Abstract)
- **The use of DMSO in tennis elbow and rotator cuff tendonitis: a double-blind study.**  
Author(s): Percy EC, Carson JD.  
Source: Medicine and Science in Sports and Exercise. 1981; 13(4): 215-9.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=6456396&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6456396&dopt=Abstract)
- **Thermography as a diagnostic aid in tennis elbow.**  
Author(s): Shilo R, Engel J, Farin I, Horochowski H.  
Source: Handchirurgie. 1976; 8(2): 101-3.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=992484&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=992484&dopt=Abstract)

- **Treatment of chronic tennis elbow with botulinum toxin.**  
 Author(s): Morre HH, Keizer SB, van Os JJ.  
 Source: Lancet. 1997 June 14; 349(9067): 1746.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9193392&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9193392&dopt=Abstract)
- **Treatment of resistant tennis elbow by a combined surgical procedure.**  
 Author(s): Savastano AA, Kamionek S, Knowles K, Gibson T.  
 Source: Int Surg. 1972 June; 57(6): 470-4. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=5038823&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=5038823&dopt=Abstract)
- **Treatment of tennis elbow by acupuncture and moxibustion.**  
 Author(s): Guo Z, Cheng M.  
 Source: J Tradit Chin Med. 1998 December; 18(4): 304-7. Review. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10453602&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10453602&dopt=Abstract)
- **Treatment of tennis elbow with forearm support band.**  
 Author(s): Froimson AI.  
 Source: The Journal of Bone and Joint Surgery. American Volume. 1971 January; 53(1): 183-4.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=5540160&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=5540160&dopt=Abstract)
- **Treatment of tennis elbow. Use of a special brace.**  
 Author(s): Ilfeld FW, Field SM.  
 Source: Jama : the Journal of the American Medical Association. 1966 January 10; 195(2): 67-70.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=6015066&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6015066&dopt=Abstract)
- **Treatment on tennis elbow with heat needling--a clinical summary of 58 cases.**  
 Author(s): He LP, Wen XA.  
 Source: J Tradit Chin Med. 1988 June; 8(2): 129-30. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3412012&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3412012&dopt=Abstract)
- **Ultrastructure of the common extensor tendon in tennis elbow.**  
 Author(s): Sarkar K, Uhthoff HK.  
 Source: Virchows Arch a Pathol Anat Histol. 1980; 386(3): 317-30.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=7445420&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7445420&dopt=Abstract)
- **Upper extremity angular kinematics of the one-handed backhand drive in tennis players with and without tennis elbow.**  
 Author(s): Knudson D, Blackwell J.  
 Source: International Journal of Sports Medicine. 1997 February; 18(2): 79-82.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=9081261&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9081261&dopt=Abstract)

- **Wrist kinematics differ in expert and novice tennis players performing the backhand stroke: implications for tennis elbow.**

Author(s): Blackwell JR, Cole KJ.

Source: Journal of Biomechanics. 1994 May; 27(5): 509-16.

[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=8027087&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8027087&dopt=Abstract)

## CHAPTER 2. NUTRITION AND TENNIS ELBOW

### Overview

In this chapter, we will show you how to find studies dedicated specifically to nutrition and tennis elbow.

### Finding Nutrition Studies on Tennis Elbow

The National Institutes of Health's Office of Dietary Supplements (ODS) offers a searchable bibliographic database called the IBIDS (International Bibliographic Information on Dietary Supplements; National Institutes of Health, Building 31, Room 1B29, 31 Center Drive, MSC 2086, Bethesda, Maryland 20892-2086, Tel: 301-435-2920, Fax: 301-480-1845, E-mail: [ods@nih.gov](mailto:ods@nih.gov)). The IBIDS contains over 460,000 scientific citations and summaries about dietary supplements and nutrition as well as references to published international, scientific literature on dietary supplements such as vitamins, minerals, and botanicals.<sup>4</sup> The IBIDS includes references and citations to both human and animal research studies.

As a service of the ODS, access to the IBIDS database is available free of charge at the following Web address: <http://ods.od.nih.gov/databases/ibids.html>. After entering the search area, you have three choices: (1) IBIDS Consumer Database, (2) Full IBIDS Database, or (3) Peer Reviewed Citations Only.

Now that you have selected a database, click on the "Advanced" tab. An advanced search allows you to retrieve up to 100 fully explained references in a comprehensive format. Type "tennis elbow" (or synonyms) into the search box, and click "Go." To narrow the search, you can also select the "Title" field.

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<sup>4</sup> Adapted from <http://ods.od.nih.gov>. IBIDS is produced by the Office of Dietary Supplements (ODS) at the National Institutes of Health to assist the public, healthcare providers, educators, and researchers in locating credible, scientific information on dietary supplements. IBIDS was developed and will be maintained through an interagency partnership with the Food and Nutrition Information Center of the National Agricultural Library, U.S. Department of Agriculture.

The following information is typical of that found when using the "Full IBIDS Database" to search for "tennis elbow" (or a synonym):

- **32 cases of tennis elbow treated by the three-needle therapy on the elbow.**  
Author(s): Hubei College of Traditional Chinese Medicine, Wuhan.  
Source: Zhang, H J-Tradit-Chin-Med. 1998 September; 18(3): 197-8 0254-6272
- **An experimental model of tennis elbow in rats: a study of the contribution of the nervous system.**  
Author(s): Department of Physical Therapy, Karolinska Institutet, Stockholm, Sweden.  
Source: Haker, E Theodorsson, E Lundeberg, T Inflammation. 1998 August; 22(4): 435-44 0360-3997
- **Corticosteroid injections for tennis elbow.**  
Author(s): University of North Carolina Chapel Hill, USA. sweir@newton.med.unc.edu  
Source: Weir, S J-Fam-Pract. 1996 September; 43(3): 232, 234 0094-3509
- **How to treat tennis elbow with acupuncture?**  
Author(s): Institute of Acupuncture and Moxibustion, China Academy of Traditional Chinese Medicine, Beijing.  
Source: Hu, J J-Tradit-Chin-Med. 1991 December; 11(4): 302 0254-6272
- **Iontophoresis with cortisone in the treatment of lateral epicondylalgia (tennis elbow)-a double-blind study.**  
Author(s): Borashalsan, Boras, Sweden.  
Source: Runeson, L Haker, E Scand-J-Med-Sci-Sports. 2002 June; 12(3): 136-42 0905-7188
- **It's tennis elbow: but what is that?**  
Author(s): Albert Park Sports Medicine Centre, Melbourne.  
Source: Baquie, P Aust-Fam-Physician. 1999 March; 28(3): 266-7 0300-8495
- **Local injection treatment of tennis elbow--hydrocortisone, triamcinolone and lignocaine compared.**  
Author(s): Rheumatology Unit, Guy's Hospital, London.  
Source: Price, R Sinclair, H Heinrich, I Gibson, T Br-J-Rheumatol. 1991 February; 30(1): 39-44 0263-7103
- **Tennis elbow.**  
Source: Murtagh, J E Aust-Fam-Physician. 1988 February; 17(2): 90-1, 94-5 0300-8495
- **Tennis elbow. Principles of ongoing management.**  
Source: Baquie, P Aust-Fam-Physician. 1999 July; 28(7): 724-5 0300-8495
- **Tennis elbow: a biomechanical and therapeutic approach.**  
Author(s): Department of Osteopathic Sciences, University of Medicine and Dentistry of New Jersey--School of Osteopathic Medicine, Stratford.  
Source: Schnatz, P Steiner, C J-Am-Osteopath-Assoc. 1993 July; 93(7): 778, 782-8 0098-6151
- **Tennis elbow--a reappraisal.**  
Author(s): Rheumatology Research Unit, Addenbrook's Hospital, Cambridge, UK.  
Source: Chard, M D Hazleman, B L Br-J-Rheumatol. 1989 June; 28(3): 186-90 0263-7103
- **Treatment of tennis elbow by acupuncture and moxibustion.**  
Author(s): Huabei Coal Medical College, Tangshan, Hebei Province.  
Source: Guo, Z Cheng, M J-Tradit-Chin-Med. 1998 December; 18(4): 304-7 0254-6272
- **Treatment on tennis elbow with heat needling--a clinical summary of 58 cases.**  
Source: He, L P Wen, X A J-Tradit-Chin-Med. 1988 June; 8(2): 129-30 0254-6272



## Federal Resources on Nutrition

In addition to the IBIDS, the United States Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) provide many sources of information on general nutrition and health. Recommended resources include:

- healthfinder®, HHS's gateway to health information, including diet and nutrition: <http://www.healthfinder.gov/scripts/SearchContext.asp?topic=238&page=0>
- The United States Department of Agriculture's Web site dedicated to nutrition information: [www.nutrition.gov](http://www.nutrition.gov)
- The Food and Drug Administration's Web site for federal food safety information: [www.foodsafety.gov](http://www.foodsafety.gov)
- The National Action Plan on Overweight and Obesity sponsored by the United States Surgeon General: <http://www.surgeongeneral.gov/topics/obesity/>
- The Center for Food Safety and Applied Nutrition has an Internet site sponsored by the Food and Drug Administration and the Department of Health and Human Services: <http://vm.cfsan.fda.gov/>
- Center for Nutrition Policy and Promotion sponsored by the United States Department of Agriculture: <http://www.usda.gov/cnpp/>
- Food and Nutrition Information Center, National Agricultural Library sponsored by the United States Department of Agriculture: <http://www.nal.usda.gov/fnic/>
- Food and Nutrition Service sponsored by the United States Department of Agriculture: <http://www.fns.usda.gov/fns/>

## Additional Web Resources

A number of additional Web sites offer encyclopedic information covering food and nutrition. The following is a representative sample:

- AOL: <http://search.aol.com/cat.adp?id=174&layer=&from=subcats>
- Family Village: [http://www.familyvillage.wisc.edu/med\\_nutrition.html](http://www.familyvillage.wisc.edu/med_nutrition.html)
- Google: <http://directory.google.com/Top/Health/Nutrition/>
- Healthnotes: <http://www.healthnotes.com/>
- Open Directory Project: <http://dmoz.org/Health/Nutrition/>
- Yahoo.com: <http://dir.yahoo.com/Health/Nutrition/>
- WebMD® Health: <http://my.webmd.com/nutrition>
- WholeHealthMD.com: <http://www.wholehealthmd.com/reflib/0,1529,00.html>

The following is a specific Web list relating to tennis elbow; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **Food and Diet**

- Tendinitis**

- Source: Healthnotes, Inc.; [www.healthnotes.com](http://www.healthnotes.com)

## CHAPTER 3. ALTERNATIVE MEDICINE AND TENNIS ELBOW

### Overview

In this chapter, we will begin by introducing you to official information sources on complementary and alternative medicine (CAM) relating to tennis elbow. At the conclusion of this chapter, we will provide additional sources.

### The Combined Health Information Database

The Combined Health Information Database (CHID) is a bibliographic database produced by health-related agencies of the U.S. federal government (mostly from the National Institutes of Health) that can offer concise information for a targeted search. The CHID database is updated four times a year at the end of January, April, July, and October. Check the titles, summaries, and availability of CAM-related information by using the “Simple Search” option at the following Web site: <http://chid.nih.gov/simple/simple.html>. In the drop box at the top, select “Complementary and Alternative Medicine.” Then type “tennis elbow” (or synonyms) in the second search box. We recommend that you select 100 “documents per page” and to check the “whole records” options. The following was extracted using this technique:

- **NIH Consensus Conference: Acupuncture**

Source: JAMA. Journal of the American Medical Association. 280(17): 1518-1524. November 4, 1998.

Summary: This journal article presents the findings of the consensus conference on acupuncture, sponsored by the Office of Alternative Medicine and the Office of Medical Applications of Research, National Institutes of Health. The purpose of the conference was to provide clinicians, patients, and the general public with a reliable assessment of the use and effectiveness of acupuncture for a variety of conditions. A multidisciplinary panel evaluated evidence presented by experts and in the scientific literature, and developed a consensus statement addressing five issues: the efficacy of acupuncture compared with placebo or sham acupuncture, the place of acupuncture in clinical practice, the biological effects of acupuncture, the integration of acupuncture into the health care system, and directions for future research. The panel concluded that many of the efficacy studies of acupuncture provide equivocal results because of design, sample

size, and other factors. The issue is further complicated by inherent difficulties in the use of appropriate controls. However, promising results have emerged showing the efficacy of acupuncture for adult postoperative and chemotherapy nausea and vomiting, and in postoperative dental pain. In other conditions such as addiction, stroke rehabilitation, headache, menstrual cramps, fibromyalgia, myofascial pain, osteoarthritis, **tennis elbow**, low back pain, carpal tunnel syndrome, and asthma, acupuncture may be useful as an adjunct treatment, an acceptable alternative, or part of a comprehensive management plan. This article has 66 references.

## National Center for Complementary and Alternative Medicine

The National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health (<http://nccam.nih.gov/>) has created a link to the National Library of Medicine's databases to facilitate research for articles that specifically relate to tennis elbow and complementary medicine. To search the database, go to the following Web site: <http://www.nlm.nih.gov/nccam/camonpubmed.html>. Select "CAM on PubMed." Enter "tennis elbow" (or synonyms) into the search box. Click "Go." The following references provide information on particular aspects of complementary and alternative medicine that are related to tennis elbow:

- **32 cases of tennis elbow treated by the three-needle therapy on the elbow.**  
Author(s): Zhang H.  
Source: J Tradit Chin Med. 1998 September; 18(3): 197-8. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10453613&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10453613&dopt=Abstract)
- **52 cases of external humeral epicondylitis treated by acupuncture and moxibustion.**  
Author(s): Mei ZY.  
Source: J Tradit Chin Med. 1989 March; 9(1): 3-4. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=2761280&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2761280&dopt=Abstract)
- **A rational management of tennis elbow.**  
Author(s): Kamien M.  
Source: Sports Medicine (Auckland, N.Z.). 1990 March; 9(3): 173-91. Review.  
[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=2180031&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2180031&dopt=Abstract)
- **Acupuncture and chronic pain management.**  
Author(s): Lee TL.  
Source: Ann Acad Med Singapore. 2000 January; 29(1): 17-21. Review.  
[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=10748959&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10748959&dopt=Abstract)
- **Acupuncture in chronic epicondylitis: a randomized controlled trial.**  
Author(s): Fink M, Wolkenstein E, Karst M, Gehrke A.  
Source: Rheumatology (Oxford, England). 2002 February; 41(2): 205-9.  
[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=11886971&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11886971&dopt=Abstract)

- **Acupuncture therapy for tennis elbow.**  
 Author(s): Brattberg G.  
 Source: Pain. 1983 July; 16(3): 285-8.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=6888954&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6888954&dopt=Abstract)
  
- **Acupuncture treatment in epicondylalgia: a comparative study of two acupuncture techniques.**  
 Author(s): Haker E, Lundeberg T.  
 Source: The Clinical Journal of Pain. 1990 September; 6(3): 221-6.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=2135016&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2135016&dopt=Abstract)
  
- **Acupuncture treatment of soft tissue injury.**  
 Author(s): Lu S.  
 Source: J Tradit Chin Med. 1992 September; 12(3): 228-32. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=1453765&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1453765&dopt=Abstract)
  
- **Acupuncture treatment of superficial pain by subcutaneous needling.**  
 Author(s): Wu S, Zhu J, Gong W.  
 Source: J Tradit Chin Med. 2002 June; 22(2): 117-8. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12125484&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12125484&dopt=Abstract)
  
- **Allergic contact dermatitis from Capparis spinosa L. applied as wet compresses.**  
 Author(s): Angelini G, Vena GA, Filotico R, Foti C, Grandolfo M.  
 Source: Contact Dermatitis. 1991 May; 24(5): 382-3.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=1893693&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1893693&dopt=Abstract)
  
- **An holistic approach to recovery from an overuse injury in a games player.**  
 Author(s): Nimmo MA, McLean D, Mutrie N, McKenzie S.  
 Source: British Journal of Sports Medicine. 1986 September; 20(3): 103-6.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3779335&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3779335&dopt=Abstract)
  
- **Application of modalities in overuse syndromes.**  
 Author(s): Gieck JH, Saliba EN.  
 Source: Clinics in Sports Medicine. 1987 April; 6(2): 427-66. Review.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=3319209&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3319209&dopt=Abstract)
  
- **Author's reply to Dr. G. Thorsteinsson's letter to the editor.**  
 Author(s): Haker E, Lundeberg T.  
 Source: The Clinical Journal of Pain. 1991 June; 7(2): 168-9.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=1823556&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1823556&dopt=Abstract)

- **Chronic epicondylitis: effects of real and sham acupuncture treatment: a randomised controlled patient- and examiner-blinded long-term trial.**  
Author(s): Fink M, Wolkenstein E, Luennemann M, Gutenbrunner C, Gehrke A, Karst M.  
Source: Forschende Komplementarmedizin Und Klassische Naturheilkunde = Research in Complementary and Natural Classical Medicine. 2002 August; 9(4): 210-5.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12232492&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12232492&dopt=Abstract)
- **Chronic lateral epicondylitis of the elbow: A prospective study of low-energy shockwave therapy and low-energy shockwave therapy plus manual therapy of the cervical spine.**  
Author(s): Rompe JD, Riedel C, Betz U, Fink C.  
Source: Archives of Physical Medicine and Rehabilitation. 2001 May; 82(5): 578-82.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=11346831&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11346831&dopt=Abstract)
- **Chronic lateral humeral epicondylitis--a double-blind controlled assessment of pulsed electromagnetic field therapy.**  
Author(s): Devereaux MD, Hazleman BL, Thomas PP.  
Source: Clin Exp Rheumatol. 1985 October-December; 3(4): 333-6.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=4085165&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4085165&dopt=Abstract)
- **Clinical use of topographic multiple needling.**  
Author(s): Ji X, Zhang Y.  
Source: J Tradit Chin Med. 1990 March; 10(1): 30-2. No Abstract Available.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=2362461&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2362461&dopt=Abstract)
- **Comparison of effects of phonophoresis and iontophoresis of naproxen in the treatment of lateral epicondylitis.**  
Author(s): Baskurt F, Ozcan A, Algun C.  
Source: Clinical Rehabilitation. 2003 February; 17(1): 96-100.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12617384&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12617384&dopt=Abstract)
- **Comparison of the effectiveness between manual acupuncture and electro-acupuncture on patients with tennis elbow.**  
Author(s): Tsui P, Leung MC.  
Source: Acupuncture & Electro-Therapeutics Research. 2002; 27(2): 107-17.  
[http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=12269719&dopt=Abstract](http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12269719&dopt=Abstract)
- **Complication of acupuncture in a patient with Behcet's disease.**  
Author(s): Murray PI, Aboteen N.  
Source: The British Journal of Ophthalmology. 2002 April; 86(4): 476-7.  
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## Additional Web Resources

A number of additional Web sites offer encyclopedic information covering CAM and related topics. The following is a representative sample:

- Alternative Medicine Foundation, Inc.: <http://www.herbmed.org/>
- AOL: <http://search.aol.com/cat.adp?id=169&layer=&from=subcats>
- Chinese Medicine: <http://www.newcenturynutrition.com/>
- drkoop.com<sup>®</sup>: <http://www.drkoop.com/InteractiveMedicine/IndexC.html>
- Family Village: [http://www.familyvillage.wisc.edu/med\\_altn.htm](http://www.familyvillage.wisc.edu/med_altn.htm)
- Google: <http://directory.google.com/Top/Health/Alternative/>
- Healthnotes: <http://www.healthnotes.com/>
- MedWebPlus:  
[http://medwebplus.com/subject/Alternative\\_and\\_Complementary\\_Medicine](http://medwebplus.com/subject/Alternative_and_Complementary_Medicine)
- Open Directory Project: <http://dmoz.org/Health/Alternative/>
- HealthGate: <http://www.tnp.com/>
- WebMD<sup>®</sup>Health: [http://my.webmd.com/drugs\\_and\\_herbs](http://my.webmd.com/drugs_and_herbs)
- WholeHealthMD.com: <http://www.wholehealthmd.com/reflib/0,1529,00.html>
- Yahoo.com: [http://dir.yahoo.com/Health/Alternative\\_Medicine/](http://dir.yahoo.com/Health/Alternative_Medicine/)

The following is a specific Web list relating to tennis elbow; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **General Overview**

- **Tendinitis**

- Source: Integrative Medicine Communications; [www.drkoop.com](http://www.drkoop.com)

- **Alternative Therapy**

- **Acupuncture**

- Source: Integrative Medicine Communications; [www.drkoop.com](http://www.drkoop.com)

- **Chiropractic**

- Source: Integrative Medicine Communications; [www.drkoop.com](http://www.drkoop.com)

- **Herbs and Supplements**

- **DMSO**

- Source: Healthnotes, Inc.; [www.healthnotes.com](http://www.healthnotes.com)

## **General References**

A good place to find general background information on CAM is the National Library of Medicine. It has prepared within the MEDLINEplus system an information topic page dedicated to complementary and alternative medicine. To access this page, go to the MEDLINEplus site at <http://www.nlm.nih.gov/medlineplus/alternativemedicine.html>. This Web site provides a general overview of various topics and can lead to a number of general sources.



## CHAPTER 4. PATENTS ON TENNIS ELBOW

### Overview

Patents can be physical innovations (e.g. chemicals, pharmaceuticals, medical equipment) or processes (e.g. treatments or diagnostic procedures). The United States Patent and Trademark Office defines a patent as a grant of a property right to the inventor, issued by the Patent and Trademark Office.<sup>5</sup> Patents, therefore, are intellectual property. For the United States, the term of a new patent is 20 years from the date when the patent application was filed. If the inventor wishes to receive economic benefits, it is likely that the invention will become commercially available within 20 years of the initial filing. It is important to understand, therefore, that an inventor's patent does not indicate that a product or service is or will be commercially available. The patent implies only that the inventor has "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States. While this relates to U.S. patents, similar rules govern foreign patents.

In this chapter, we show you how to locate information on patents and their inventors. If you find a patent that is particularly interesting to you, contact the inventor or the assignee for further information. **IMPORTANT NOTE:** When following the search strategy described below, you may discover non-medical patents that use the generic term "tennis elbow" (or a synonym) in their titles. To accurately reflect the results that you might find while conducting research on tennis elbow, we have not necessarily excluded non-medical patents in this bibliography.

### Patents on Tennis Elbow

By performing a patent search focusing on tennis elbow, you can obtain information such as the title of the invention, the names of the inventor(s), the assignee(s) or the company that owns or controls the patent, a short abstract that summarizes the patent, and a few excerpts from the description of the patent. The abstract of a patent tends to be more technical in nature, while the description is often written for the public. Full patent descriptions contain much more information than is presented here (e.g. claims, references, figures, diagrams, etc.). We will tell you how to obtain this information later in the chapter. The following is an

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<sup>5</sup>Adapted from the United States Patent and Trademark Office:  
<http://www.uspto.gov/web/offices/pac/doc/general/whatis.htm>.

example of the type of information that you can expect to obtain from a patent search on tennis elbow:

- **Acupressure glove device**

Inventor(s): Lanzisera; Frank (8008 18th Ave. W., Bradenton, FL 34209), Rowe-Lanzisera; Lisa (8008 18th Ave. W., Bradenton, FL 34209)

Assignee(s): none reported

Patent Number: 5,405,357

Date filed: September 22, 1993

Abstract: An acupressure glove enabling safe, accurate and cost-effective application of self-stimulation of acupressure points on the hand and wrist. By producing direct pressure onto an acupressure point via a specifically positioned nodule on the glove's interior surface and guided by the corresponding color-coded locator on the glove's exterior surface an individual can utilize acupressure therapy for a variety of physical complaints. The physical complaints can be comprised of carpal tunnel syndrome, golfer's and **tennis elbow**, general pain, acute and chronic neck pain, headache, and stress and anxiety.

Excerpt(s): This invention is a device for non-invasive auto-stimulation of acupressure points on the dorsal and palmar surfaces of the hands and fingers. More specifically, a glove, conforming to anatomical contours, is fitted on its interior surface area with nodules that, when worn by an individual, are positioned over acupressure points of the hand, wrist, and fingers. Gloves are to be worn on both the right and left. The individual, after pulling the gloves on snugly, applies direct pressure to locators on the exterior surface area of the glove which are attached through the glove to the underlying nodules. Stimulation of acupressure points via direct pressure produces a positive reaction by the body for a plurality of physical complaints. Acupressure, a non-invasive form of acupuncture is accepted by the medical community and the general public, as a valid form of treatment. Individuals seeking a non-drug approach for a plurality of physical complaints find acupressure therapy a safe and cost-effective alternative. This invention relates to a glove for auto-stimulation of acupressure points on the hands, fingers and wrists using direct pressure on nodules located on the glove's interior surface area. Automatic correct placement of these nodules over the acupressure points is accomplished by a flexible, elastic glove that conforms to a typical hand's bony and soft-tissue contours. These nodules are identified on the glove's exterior surface by locators. The individual then only has to refer to the enclosed chart for their physical complaint and corresponding acupressure point(s) to safely and accurately apply acupressure therapy via direct pressure. This invention allows an individual to accurately apply acupressure therapy without having to rely on other guides or having specific anatomical knowledge of the hand, wrist, and fingers.

Web site: [http://www.delphion.com/details?pn=US05405357\\_\\_](http://www.delphion.com/details?pn=US05405357__)

- **Brace apparatus**

Inventor(s): Marx; Alvin J. (315 College Road, Bronx, NY 10471)

Assignee(s): none reported

Patent Number: 4,048,991

Date filed: August 25, 1976

Abstract: An improved wrist brace maintains the wrist extended and slightly ulnar deviated (so called position of function), providing support and impact counterforce bracing. The brace is utilized for play by sufferers of "tennis elbow" (tendonitis of the conjoined tendon of the extensor communis and extensor carpi radialis brevis at the insertion into the lateral epicondyl of the humerus), reduced subluxation of the wrist ("sprain"), and/or rheumatoid arthritis of the wrist. The brace includes a semirigid, fluid-passing (e.g., woven) semiflexible outer backer layer, and an inner porous layer, e.g., and open pore plastic. Particular forms of buckle and strapping are secured at opposite ends of the elongated backer-foam laminate to secure the brace in place, as by hook and eye type cooperating fastener strips.

Excerpt(s): The wrist consists of the eight small bones held tightly by ligaments and arranged in two rows. The proximal row consists of the scaphoid, lunate, triquetrum and pisiform, and the distal row the trapezium, trapezoid, capitate and hamate. The major wrist joints are usually considered to be the articulations between the radius and the proximal row of wrist bones and between the radius and ulna. At rest the wrist is slightly palmar flexed and ulnar deviated. The wrist's range of motion is 80.degree. flexion, 70.degree. extension, 30.degree. ulnar deviation, and 20.degree. radial abduction. No muscles insert into the wrist except for the flexor carpi ulnaris which inserts into the pisiform. The usual motions of the wrist are oblique due to antagonistic muscle groups: extensor carpi radialis versus flexor carpi ulnaris.

Web site: [http://www.delphion.com/details?pn=US04048991\\_\\_](http://www.delphion.com/details?pn=US04048991__)

- **Compression device for tennis elbow**

Inventor(s): Bilinsky; Michael C. (515 Kelton Ave., Los Angeles, CA 90024), Gold; Robert L. (5967 E. Pacific Coast Hwy., Long Beach, CA 90803)

Assignee(s): none reported

Patent Number: 4,128,097

Date filed: August 4, 1976

Abstract: The invention is a compression device for **tennis elbow** which compresses the common extensor muscle group of an individual so that he may continue to play tennis despite the presence of **tennis elbow**. The compression device includes an elastic member which is formed out of an elastic material and which has a tubular shape adapted to provide a compressive force on the common extensor muscle group of the individual. The elastic member has an outer surface and an inner surface. The elastic member also has a longitudinal slit which is fastened together by velcro fastening material. The compression device also includes a non-compressible member which is formed out of a non-rigid material and which is disposed on the inner surface of the elastic member. The non-compressible member is adapted to cover the common extensor muscle group. The compression device further includes a non-compressible pad which is formed out of a non-rigid material and which is disposed on the inner

surface of the elastic member so that it covers the attachment area of the common extensor muscle group.

Excerpt(s): The present invention relates to a medical device for supporting musculotendinous units of an individual's extremities, and more particularly to a compression device for **tennis elbow** which not only enable the individual to continue to exercise without pain or further aggravation to an existing injury in his elbow, but which also prevents the occurrence of **tennis elbow** through a set of exercise procedures using the compression device. The term **tennis elbow** may include many difficulties which may occur in and about the elbow; there are at least eleven specific elbow complaints which have been called **tennis elbow**. The primary symptom is a chronic inflammation of the attachment of the common extensor muscle group, which are the extensor carpi radialis brevis and extensor communis, to the lateral epicondyle as well as the attachment of the condylar origin of the radial collateral ligament. There are other muscle groups which originate from the elbow, specifically the olecraneum, including the acroneus which arises from the humerus, but which inserts into the extensor muscle group attachment area in the elbow. These muscle groups are also weak in their anatomical design. It is believe that this chronic inflammation occurs because the mechanical construction of the elbow itself predisposes the individual to injury during movements of a tennis match. A prominent radial head creates a fulcrum with two leverage forces, one a long lever from the radial head just below the point of the elbow to the wrist where the muscles attach, and the other a short lever from the radial head to the point of the elbow, the lateral epicondyle. The long leverage force creates pressure against the attachment of the common extensor muscle mass, subjecting it to repetitive and chronic strain with the subsequent formation of non-elastic scar tissue. The scar tissue often tears again and tends to become reinfamed. The situation is compounded by the lack of lack of appropriate extensor muscle power to withstand the forces against it which is so characteristic of the occasional athlete who rarely trains for sports activity.

Web site: [http://www.delphion.com/details?pn=US04128097\\_\\_](http://www.delphion.com/details?pn=US04128097__)

- **Cuff for the relief of tennis elbow and the like**

Inventor(s): Sweitzer; Robert R. (135 N. Syndicate Ave., Thunder Bay, Ontario, CA)

Assignee(s): none reported

Patent Number: 4,299,214

Date filed: January 14, 1980

Abstract: A semi-rigid formed shape or cuff is provided with a substantially U-shaped inwardly extending projection so that when wrapped around the forearm adjacent the elbow crease, controlled application of pressure is provided over the proximal area of the forearm extensor muscle group and/or the proximal forearm flexor group without applying a circumferential and equal pressure to the entire area.

Excerpt(s): This invention relates to new and useful improvements in the design and fabrication of a brace or orthosis, referred to as a cuff or sleeve, which is to be used in the treatment of **tennis elbow**, either medial or lateral. **Tennis elbow** includes the painful condition known as epicondylitis and epicondylalgia. Current methods of applying an external force to the lateral or medial area of the proximal forearm in order to relieve the stress imposed on the tender area of the muscle and/or the ligamentous attachment during activity, is to use a fabric band of approximately 2 inches in width which is circumferentially wrapped around the forearm and closed with a pressure sensitive



fastener such as Velcro. Such bands are disclosed in J Bone Joint Surg 53A, page 183-184, 1971 by Froimson. However such bands, although they often effect some relief, tend to dislocate on the forearm and may be foam rubber lined to prevent this. Such bands, in order to be effective, have to be relatively tight thereby tending to cause venous congestion and edema if worn too tightly or for too long. Therefore it is recommended that they are to be worn only for actual play or high stress producing situations.

Web site: [http://www.delphion.com/details?pn=US04299214\\_\\_](http://www.delphion.com/details?pn=US04299214__)

- **Device for ameliorating tennis elbow**

Inventor(s): Clears; Weldon R. (50 E. 89th St., Apt. 14A, New York, NY 10128)

Assignee(s): none reported

Patent Number: 6,179,751

Date filed: October 13, 1999

Abstract: A device for exercising the tendons and muscles affected by **tennis elbow** takes the preferred form of a closed band of elastic material of sufficient circumference to fit around the fingers and thumb of the hand. On the band are four finger loops and one thumb loop. The wearer repeatedly extends the fingers and thumb against the tension of the elastic band and then retracts them. This exercising of the inflamed tendons and muscles ameliorates over time the pain and discomfort of **tennis elbow**.

Excerpt(s): It has been reported that nearly half of all recreational players age 30 or older have suffered from **tennis elbow** symptoms, which may arise from tennis backhands and serves. Incidence of the malady has increased with the introduction of new tennis technologies, especially longer racquets and tighter stringing. **Tennis elbow** can arise not only from sports and working with tools, but also from simply picking up an object with the arm extended. Lateral epicondylitis refers to inflammation of the tendons that attach the extensor muscles of the forearm to the outer portion of the bony prominence of the elbow, which is the lateral epicondyle. The resulting pain tends to be felt in the outer portions of the elbow and forearm. **Tennis elbow** pain coming from the inner portion of the elbow may be designated as medial epicondylitis wherein tendons of the extensor muscles that are attached to the medial epicondyle are inflamed. The term "tennis elbow" is often applied to any pain in the elbow or forearm.

Web site: [http://www.delphion.com/details?pn=US06179751\\_\\_](http://www.delphion.com/details?pn=US06179751__)

- **Device for preventing tennis elbow**

Inventor(s): Kim; Wong C. (Selanger Darul Ehsan, MY), Yong; Katherine O. B. (Selanger Darul Ehsan, MY)

Assignee(s): Rubbermade Accessories SDN. BHD. (Subang Jaya, MY)

Patent Number: 5,096,194

Date filed: January 31, 1991

Abstract: A device for relieving **tennis elbow** and that is mountable on the strings of a sports racquet, the device being defined by an elongated flexible, rubber-like strap having dampening characteristics and that is formed with a plurality of transversely extending external ribs thereon in spaced apart longitudinal relation, the flexible strap being interwoven between adjacent longitudinally extending strings of the racquet,

wherein the ribs as formed on the flexible strap define stops for locating the flexible strap in a positive position on the longitudinally extending strings for preventing the lateral shifting of the flexible strap thereon.

Excerpt(s): The present invention relates to a device for relieving stress on the arm of a user of a sports racquet, wherein the device is mountable on the racquet and comprises an elongated flexible rubber-like strap having dampening characteristics. Sports racquets of the type to which the subject invention is applied, that is, those racquets used for playing tennis, racquetball, squash, badminton, and the like, have a particular construction when made of materials other than wood that tend to transfer vibrational stresses created upon an impact of a ball on the racquet strings to the arm of the user. Constant use of such a racquet quite frequently results in what is commonly known as "tennis elbow", and usually results from vibrations that occur upon frequent impact of a ball against the racquet strings. **Tennis elbow** can essentially incapacitate a user in play since considerable discomfort will occur during the use of the racquet in the play of a game. Some efforts have been made to diminish the vibration and shock that results from impact of a ball on the strings of a racquet, particularly when a non-wooden racquet is utilized, and in some of these prior known devices, attempts have been made to reduce shock and vibration resulting from impact of a ball on the racquet strings by connecting certain of the strings of the racquet through a plug type of device. Such devices are illustrated, for example, in the U.S. Pat. Nos. 4,761,007 and 4,909,509 to BOSCHIAN, and the U.S. Pat. No. 4,927,143 to HILLOCK. Although the devices as described in the aforementioned U.S. patents are intended to provide some form of a dampening effect, the devices have not been found to be very effective in dampening the vibrations resulting from impact of a ball on the strings of a racquet, and as a result have not been readily accepted for use.

Web site: [http://www.delphion.com/details?pn=US05096194\\_\\_](http://www.delphion.com/details?pn=US05096194__)

- **Elastic elbow brace**

Inventor(s): Korobow; Leon (50 Cambridge Rd., Great Neck, NY 11023)

Assignee(s): none reported

Patent Number: 6,224,564

Date filed: June 5, 1998

Abstract: An elastic elbow brace for the prevention and treatment of **tennis elbow**, the brace having an elastic outer sleeve and a concentric inner sleeve. Interposed between the concentric sleeves is a pair of longitudinally extending resilient pads arranged parallel to each other and spaced along their longitudinal edges.

Excerpt(s): The present invention relates to an elastic brace for tendons, elbows and similar body joints, and, in particular, to an elbow brace for preventing the development of **tennis elbow** and aiding in the relief of **tennis elbow**, should that have already occurred. Numerous braces, pads and similar devices are currently available to reduce the shock of striking a ball. These devices are touted as aiding in the relief of, and/or preventing **tennis elbow**. These products, however, have not achieved widespread commercial success. The products referred to above generally fall within two groups, the first being generally ineffective, and the second although effective in relieving and/or preventing pain being so cumbersome as to hinder the player in playing the game. It is therefore an object of the present invention to overcome the shortcomings and deficiencies found in the prior art.

Web site: [http://www.delphion.com/details?pn=US06224564\\_\\_](http://www.delphion.com/details?pn=US06224564__)

- **Elbow brace and method for preventing or attenuating tennis elbow**

Inventor(s): Nyi; Franklin H. (23409 Broadwell Ave., Torrance, CA 90502)

Assignee(s): none reported

Patent Number: 5,063,913

Date filed: November 29, 1990

Abstract: A brace for preventing or attenuating the effects of **tennis elbow** utilizes a pair of shock absorbing elements that are placed over the arm over the lateral and medial epicondyle of the humerus bone. These shock absorbing elements provide a medium for absorbing a portion of the shock energy and vibration that can travel along the forearm and exit the elbow of a person during physical activity. The elbow brace also includes pressure transmitting elements which are designate to localize pressure directly on the tendon that extends from the extensor digitorum muscle that is attached to the humerus. The other pressure transmitting element can be placed in contact with the arm directly over the tendon of the triceps brachii which is attached to the olecranon of the ulna.

Excerpt(s): The present invention relates generally to arm and elbow braces and, more particularly, to an elbow brace for preventing or attenuating the painful inflammation of the tendons in the elbow, commonly known as "tennis elbow." The present invention accomplishes this through the application of direct pressure on various tendons that are susceptible to abnormal stretching during strenuous athletic activities along with placement of shock absorbing elements around the epicondyle of the humerus bone to absorb and dissipate at least a portion of any shock energy that may travel along the forearm of the user. The invention is also directed to a method for preventing or reducing this condition known as **tennis elbow** utilizing these same principles. Tennis elbow is a commonly used term to describe a painful, medical condition which is characterized by inflammation of the ligaments that connect the two bones of the forearm, the radius and ulna, and inflammation of the tendons of the muscles of the forearm that are attached to the two spurs of the humerus, the medial and lateral epicondyle. Inflammation can also occur to the tendon of the triceps brachii which is attached to the olecranon of the ulna and can also extend to the tissues in the area directly surrounding the medial and lateral epicondyle. This condition, as the name implies, has been generally associated with the sport of tennis, although it can be experienced by participants in a number of other sporting activities, in which a racket, bat, or other sporting equipment is utilized to strike another object. This condition can also occur in persons who throw objects, such as baseballs, footballs and the like, especially if an abnormal amount of bending and twisting occurs in the arm and elbow during the throw. Also, **tennis elbow** can occur in non-sports related activities, such as hammering or performing manual labor which requires a high amount of elbow flexure and repetitive motion of the forearm.

Web site: [http://www.delphion.com/details?pn=US05063913\\_\\_](http://www.delphion.com/details?pn=US05063913__)

- **Forearm transaxial compression band**

Inventor(s): Fareed; Donald O. (801 Buena Vista Ave., Santa Barbara, CA 93108)

Assignee(s): none reported

Patent Number: 6,077,241

Date filed: June 21, 1996

Abstract: A device adapted to be circumferentially fitted around the forearm to alleviate symptoms of overuse injuries, such as **tennis elbow**. The device is an elongate band composed of two elongate arcuate compression plates detachably and adjustably linked end to end by flexible straps. Each of the compression plates has an inwardly concave skin contacting surface which, in operation, are in circumferent opposition on the forearm to compress the skin overlying the radial extensor and flexor muscles within the forearm transaxially disposed therebetween. When the band is circumferentially tensioned and fastened to encircle the forearm, only the discrete, anatomically opposed skin contacting surfaces of the compression plates press against the skin. The skin contacting surfaces of the two compression plates are positioned by the user to immediately overlie the extensor and flexor muscle mass respectively. Only the skin underlying the skin-contacting surface of the compression plates and the intervening tissue transaxially disposed therebetween is compressed. Other circumferential portions of the forearm underlying the band are not compressed and the venous blood return is substantially unimpaired by the band.

Excerpt(s): The present invention relates generally to an adjustable compression arm band and, more specifically, to an arm band constructed to be worn by persons suffering from symptoms of lateral epicondylitis (tennis elbow), radial supinator syndrome and medial epicondylitis. Tennis elbow, sometimes referred to in the prior art alternatively as lateral epicondylitis or epicondylalgia externa, commonly encountered in men and women between the ages of thirty and fifty who engage in racket sports. In people in the aforesaid age group, muscles and tendons become less supple and less able to absorb and dissipate the forces associated with sudden acceleration and deceleration of muscle groups within the forearm which cause the inflammation associated with **tennis elbow**, particularly where the extensor muscle mass meets the bone. **Tennis elbow** is also found in individuals pursuing activities such as golf and bowling. It is also found in certain trades such as carpentry, due to repeated hammering and driving of screws, and house painting, due to the forward and backward stroke of the brush. Although "tennis elbow" is frequently thought of as an inflammation of the extensor muscles of the forearm, such inflammation may be accompanied by radial supinator inflammation due to repetitive pronation and supination. Such inflammation of the supinator muscle mass can cause tension on the overlying extensor muscle and resultant inflammation. The forearm extensor and supinator muscles are those that come into play during the extension, raising or snapping of the wrist. Every time a tennis ball hits a racket, there is a certain force or mechanical shock wave propagated up the forearm muscles which are already in tension due to the weight and acceleration of the racket and the tension caused by the centrifugal force of the stroke. If the ball is mis-hit, an extra force is added resulting in a snap of the wrist. It is this extra repetitive stress that causes the trauma leading to inflammation in the extensor and supinator muscles.

Web site: [http://www.delphion.com/details?pn=US06077241\\_\\_](http://www.delphion.com/details?pn=US06077241__)

- **Game racket with incurvate contact surfaces**

Inventor(s): Holmes; David (17577 Johnson Ave., Sonoma, CA 95476)

Assignee(s): none reported

Patent Number: 5,150,896

Date filed: March 3, 1992

Abstract: A game racket (20) having rigid, incurvate contact surfaces (29) with apertures (52) for the passage of air rather than the conventional network of stringing, both contact surfaces (29) having a continuous, smooth corrective curvature able to automatically compensate for the lateral and longitudinal torsional forces that are exerted by an incoming ball (56) onto the racket (20), when a player fails to hit the ball dead center on the racket face. Having no stringing, the racket of the present invention is completely maintenance-free and provides numerous other advantages over conventional racket designs, including: texturable contact surfaces (38); a variety of aperture (52) shapes and patterns with aerodynamic fairing (53); contact surfaces (29) whose playable area extends to their extreme periphery (31 and 33); means for employing vibration-dampening and shock absorbant materials in the racket's construction; and a curvature which aids in the execution of "slice" shots. An alternative design allows the two contact surfaces (43 and 44) to have differentiated curvatures and textures (39, 40, 41, 42, 54 and 55) for forehand and backhand shots. Insofar as the racket (20) itself compensates for all torsional forces, it can be gripped more loosely in the hand, and should reduce the incidence of "tennis elbow."

Excerpt(s): The invention relates to game rackets of the type having a grip, a handle shaft and a head with two contact surfaces, such as for instance a tennis racket, a squash racket, a badminton racket or a racket ball racket. Game rackets are used in a variety of sports, including tennis, badminton, squash, racket ball and ping-pong. The contact surfaces of a conventional true racket, as distinguished from the solid surfaces of a paddle, are formed by a network of flexible string under high peripheral tension. In games such as tennis--where the ball employed is of considerable mass, and the velocities achieved, especially in tournament play, are also very great--the ball is capable of exerting a significant torsional force on the player's wrist, if it is not hit dead center on the racket's face. The area which creates a minimal amount of torque and thus allows the player to aim the ball with greater precision and force is located in the central portion of the racket's face and is referred to as the "sweet spot." Much of the prior art relating to improved racket design attempts in various ways to enlarge the effective sweet spot area. This has led recently to the introduction of a variety of "oversized" racket designs into tournament play.

Web site: [http://www.delphion.com/details?pn=US05150896\\_\\_](http://www.delphion.com/details?pn=US05150896__)

- **Hand and finger exercise device**

Inventor(s): Unger; Ann (140 Cabrini Blvd., New York, NY 10033)

Assignee(s): none reported

Patent Number: 4,105,200

Date filed: March 9, 1977

Abstract: There is disclosed a hand and finger exercise device particularly useful in combatting various arm and hand ailments, such as "tennis wrist" and "tennis elbow".

The device includes a main cylindrical member, substantially of the diameter of a tennis racquet handle, adapted to be grasped in the palm of a user. Two elasticized straps run the full axial length of the member, at the side wall of the cylinder. One of these straps fits over the four fingers of the user's hand, adjacent the knuckles thereof, for maintaining the exercise device in place. The second strap fits over the four fingers of the user's hand, adjacent the finger tips. A third, thumb-receiving strap, which also runs along the axial length of the member but which extends only partially down the side wall, receives the thumb of the user. The device may be used with either of the user's hands, with the user squeezing the cylindrical member and thereafter flexing his fingers and thumb outwardly, against the forces presented by the straps.

Excerpt(s): This invention relates generally to exercise devices and, more particularly, to a self-retained hand and finger exercise device. Over the past several years, there has been a tremendous increase, in the United States and elsewhere, in tennis, golf and other leisure and sporting activities which utilize equipment which is grasped in the user's hand, and swung back and forth. There has also been a corresponding increase in various arm and hand ailments, commonly called "tennis wrist" and "tennis elbow" ailments, associated with the increase in these leisure and sporting activities. Thus, there exists a need in the art to provide a hand and finger exercise device which may be utilized to strengthen fingers, hands, wrists and arms in order to remedy the "tennis elbow" type ailments. Hand and finger exercising devices are well known in the art, as indicated by U.S. Pat. Nos. 1,126,938, 2,634,976, 3,347,547, 3,496,573, 3,542,363 and 3,612,521. However, these prior art devices have several drawbacks. For example, either they are not the type of device which would be used to strengthen the body in a way which would prevent "tennis elbow" type ailments, or they are cumbersome to use, or they may not be used by both the right and left hands of a user, or they are expensive to manufacture.

Web site: [http://www.delphion.com/details?pn=US04105200\\_\\_](http://www.delphion.com/details?pn=US04105200__)

- **Heat Pod Body Muscle Treatment Device**

Inventor(s): Last; Anthony J. (Oakville, CA)

Assignee(s): Rainbow Star Licensing (Fribourg, CH)

Patent Number: 4,905,997

Date filed: December 28, 1988

Abstract: A method for the prevention of and the treatment for epicondylalgia externa, popularly known as **tennis elbow**, is disclosed. The method involves the absorption and dissipation of the vibrational shocks caused by the off-centre hitting of a tennis ball during pronation and supination of the wrist by use of a vibration absorbing pad fluid containing device covering either the extensor or flexor muscles of the forearm. The pad is shaped to conform with the extensor or flexor muscle in the forearm, is filled with a viscous fluid or semi-fluid which will flow enough to maintain a close contact with the muscle from wrist to elbow. The viscous fluid has a thermal conductivity of less than 0.1 W/(m.degree. C.).

Excerpt(s): The present invention relates to a vibration absorbing pad for use in connection with racquet and ball game playing and to a passive heating pad for therapeutic application. The increased playing of tennis, squash and racquet-ball by men and women over 30 years of age has led to the increase of a painful problem known as "tennis elbow". This condition usually occurs in people between 30 and 50 years of age,

where muscles and tendons have become less supple and less able to absorb and dissipate vibrational shocks. Epicondylalgia externa (tennis elbow) is not only found in racquet sports but can be aggravated by other pursuits, such as, golf and bowling. It can also be found in certain trades, such as carpentry, due to repeated hammering and driving of screws, and in house painting, due to the forward and backward stroke of the brush. Also, it can be found in industrial jobs involving pneumatic hammers and the like.

Web site: [http://www.delphion.com/details?pn=US04905997\\_\\_](http://www.delphion.com/details?pn=US04905997__)

- **Pharmaceutical composition comprising an aqueous extract of a mixture of anemarrhena rhizoma and phellodendron bark for analgesic and anti-inflammation**

Inventor(s): Chung; Young-Shin (Seoul, KR), Han; Young-Bok (Seoul, KR), Hong; Eun-Kyung (Seoul, KR), Kim; Sung-Jin (Seoul, KR), Lee; Kyung-Yung (Seoul, KR), Shin; Young-Lok (Seoul, KR)

Assignee(s): Medvill Co., Ltd. (Seoul, KR)

Patent Number: 6,193,977

Date filed: March 14, 2000

Abstract: The present invention is directed to a pharmaceutical composition comprising an extract of a mixture of Anemarrhena Rhizoma, a member of the family Liliaceae and, Phellodendron bark, a member of the family Rutaceae that produces analgesic and anti-inflammatory effects, and its preparing method. The present invention is applicable to act on inflammation and pain, for example, chronic gastritis, arthralgia, benign prostate hyperplasia, chronic and recurrent cystitis, cervical disc, degenerative joint arthritis, rheumatoid arthritis, **tennis elbow**, osteoporotic pain, migraine, diabetic neuropathy pain, right flank pain, etc. The present invention a crude extract suitable for long-period administration with less side effects. Also, the present invention does not lead to dependency or resistance.

Excerpt(s): The present invention relates generally to a pharmaceutical composition comprising aqueous extracts of Anemarrhena Rhizoma, a member of the family Liliaceae, and Phellodendron Bark, a member of the family Liliaceae for analgesic and anti-inflammation, and its preparing method. More particularly, it relates to a pharmaceutical composition comprising mixed aqueous extracts of Anemarrhena Rhizoma and Phellodendron Bark for analgesic and anti-inflammation against chronic gastritis, arthralgia, benign prostate hyperplasia, chronic and recurrent cystitis, cervical disc, degenerative joint arthritis, rheumatoid arthritis, **tennis elbow**, osteoporotic pain, migraine, diabetic neuropathy pain, Rt. flank pain, etc. There are two types of pain, one of which is fast pain sensed immediately in response to stimulants and the other is slow pain sensed gradually. The slow pain results from injuries to both the skin and the internal tissue and lasts long, while the fast pain results from injuries to the skin rather than to the internal tissue. The pain is sensed through receptors distributed over the skin and tissue, especially, those for mechanical, thermal and chemical stimulants. Upon receipt of stimulation, the receptors transmit sensation to the central nerve system. Examples of the chemicals exciting the chemical type of pain receptors include bradykinin, potassium ions, acids, proteolytic enzymes, etc. Compared to the other types of sensation, the lasting pain becomes more sensitive to stimulants and develops intolerance even to a weak stimulant. In the body system, neurons of the brain and the vertebral column secrete those substances such as morphine that elicit an analgesic effect, and regulate the pain. Examples of the analgesic substances include endorphin,

enkephalin and dynorphin secreted from the brain, and serotonin and enkephalin from the vertebral column.

Web site: [http://www.delphion.com/details?pn=US06193977\\_\\_](http://www.delphion.com/details?pn=US06193977__)

- **Pneumatic arm band for localized arm pressure**

Inventor(s): Johnson, Jr.; Glenn W. (10 Friar Tuck Cir., Summit, NJ 07901)

Assignee(s): none reported

Patent Number: 4,628,918

Date filed: March 18, 1985

Abstract: A band or strap adapted to be circumferentially fitted about the arm to alleviate the symptoms of **tennis elbow**. The band incorporates inwardly protruding means of limited circumferential extent for applying a radially directed pressure against that portion of the extensor muscle coextensive therewith when the arm band is circumferentially tensioned and fastened in place about the arm. In its preferred form, the means of limited circumferential extent consists of a semi-compressible, inflated air bag carried in a pocket in the arm band. The protruding air bag applies a radially directed pressure or compressive counterforce against the extensor muscle which is of greater magnitude than the pressure exerted against the other circumferential portions of the arm engaged directly by the arm band.

Excerpt(s): The present invention relates generally to arm bands, and more specifically to a unique arm band construction adapted to be worn by persons suffering from the symptoms of **tennis elbow**. A widely practiced prior method of alleviating discomfort due to a so-called "tennis elbow" condition consists of tightening an inelastic, circumferentially extending band or strap about the affected forearm in the vicinity of the elbow sufficiently to apply a radially directed pressure or compressive counterforce against the extensor muscle when the latter contracts. Since the prior art band, however, applies the same magnitude of radial pressure against the extensor muscle portion of the arm as it applies against the other circumferential portions of the arm coextensive with its extent and displaced from the extensor muscle, considerable discomfort and possibly, interference with blood circulation may result, especially in those cases where a relatively high compressive counterforce is required against the extensor muscle in order to achieve the desired efficacy. Against the foregoing background, it is the primary object of the present invention to provide an improved arm band which may be used to alleviate the symptoms of **tennis elbow**. It is another object of the present invention to provide an improved arm band construction which when worn circumferentially about the arm incorporates means for applying a relatively high radially directed pressure or compressive counterforce against the extensor muscle portion of the arm while simultaneously applying a relatively lower radially directed pressure against the other circumferential portions of the arm displaced from the extensor muscle and coextensive with the arm band.

Web site: [http://www.delphion.com/details?pn=US04628918\\_\\_](http://www.delphion.com/details?pn=US04628918__)



- **Racket grip**

Inventor(s): Kessler; Fred B. (12 Shadow Lawn, Houston, TX 77005)

Assignee(s): none reported

Patent Number: 4,717,152

Date filed: March 5, 1986

Abstract: Disclosed is an improved grip for tennis rackets. The grip is inversely tapered such that it narrows moving along the axis of the handle away from the head of the racket. Further, the grip is hexagonal in cross-section. In other words, the grip is substantially a truncated hexagonal pyramid. This design is structurally compatible with the skeletal and muscular structure of the human hand, wrist and arm. The inverse taper allows for more comfortable gripping by allowing the wrist to automatically go into dorsi flexion which results in permitting the fingers to flex more easily. The mobile ring and little finger metacarpals are allowed to oppose the thenar eminence thus bringing the ring and little fingers into more advantageous contact with the grip thereby making the holding of the grip less fatiguing. Further, the hexagonal shape allows much more desirable points of contact between the palmar surfaces of the distal, middle and proximal phalanges of the index finger as well as the palmar surface of the metacarpals of the thumb and index finger with the surfaces of the grip. The grip of the present invention is not only more comfortably and less fatiguing, but also allows for greater control of the racket. Further, use of a racket with the grip of the present invention will aid in preventing tennis injuries such as **tennis elbow**.

Excerpt(s): This invention relates generally to grips for tennis rackets and more particularly, to tapered, hexagonally shaped tennis racket grips. The conventional tennis racket grips found in the prior art are generally octagonal in shape. The dimensions of the octagonal cross-section increase toward the base of the grip. In other words, that portion of the grip having the greatest dimensions is the extreme end of the grip away from the head of the racket. French Demande De Brevet D'Invention No. 73 20488 apparently teaches an octagonally shaped tennis racket grip which narrows toward the butt end but ultimately flares to a greater dimension at the base of the grip. The purpose of the flared end is not apparent but the flared end itself would be self defeating of the purpose of designing a tennis racket grip which more closely approaches the needs defined by the structure of the human hand. Further, the octagonal shape demonstrated in conventional tennis rackets as well as that shown in the French document is contradictory to the structural structure of the human hand. The French design has yet another deficiency. By tapering the handle, a significant amount of mass is removed from the racket which ultimately relocates the center of gravity of the racket causing the racket to become unbalanced.

Web site: [http://www.delphion.com/details?pn=US04717152\\_\\_](http://www.delphion.com/details?pn=US04717152__)

- **Semirigid counterforce brace**

Inventor(s): Marx; Alvin J. (315 College Road, Bronx, NY 10471)

Assignee(s): none reported

Patent Number: 4,027,666

Date filed: September 26, 1975

Abstract: An improved semirigid counterforce brace adapted for application on a user's forearm helps prevent and provides relief during tennis play of tendonitis of the conjoined tendon of the extensor communis and extensor carpi radialis brevis at the insertion into the lateral epicondyl, a condition commonly referred to as "tennis elbow". The brace includes a semirigid, perforated, fluid passing outer plastic backer and inner porous strap, e.g., of a fabric laminated with an open pore foamed urethane, and a strap attached to the brace and adapted to wrap around the subject's forearm, pass through a loop disposed near, but not at, one end of the outer surface of the backer sheet, and to be secured in place by cooperating fasteners, e.g., cooperating hook and eye [VELCRO (tm)] type fasteners.

Excerpt(s): This invention relates to athletic/medical apparatus and, more specifically, to an improved semirigid counterforce brace permitting tennis play when a subject suffers from so called **tennis elbow** and for preventing this condition. Tennis elbow is a tendonitis of the conjoined tendon of the extensor communis and extensor carpi radialis brevis at the insertion into the lateral epicondyl. Additionally there may be inflammation of the aponeurotic space and lateral collateral ligament. Stated in more general terms, **tennis elbow** is an inflammation of the tendon that connects the extensors of the forearm with the lateral part of the elbow. This condition results from excessive (too rapid, too forceful, or too frequent) stretching of the tendon of the forearm. It typically and frequently occurs in people over 35, generally believed to affect 50% of tennis players over that age.

Web site: [http://www.delphion.com/details?pn=US04027666\\_\\_](http://www.delphion.com/details?pn=US04027666__)

- **Sports equipment for ball games having an improved attenuation of oscillations and kick-back pulses and an increased striking force**

Inventor(s): Sommer; Roland (Kronthaler Weg 15-17, D-6231 Schwalbach/Taunus, DE)

Assignee(s): none reported

Patent Number: 5,454,562

Date filed: May 20, 1993

Abstract: Sports equipment for ball games comprising a stroke portion and a shaft portion including a grip, in particular a tennis racket or a golf club, wherein mass particles are integrated into the equipment structure which are freely displaceable or freely movable thereto and which are provided in one or a plurality of chamber(s) the volume of each of said chambers being small relative to the interior volume of the stroke and/or the shaft portion. The stroke characteristics of the sports equipment can be varied depending from the distribution of the chambers within the structure and/or from the amount of the mass particles used. Stroke shocks are attenuated with the result that occurrence of "tennis elbow" is diminished.

Excerpt(s): The invention relates to sports equipment for ball games comprising a stroke portion and a shaft at the external end of which a handle portion is provided, particularly to tennis rackets and golf clubs. It can however also be used for sports equipment for other ball games where the ball is struck with a high force, as in cricket, polo, baseball etc. It has been know for a long time that the "tennis elbow" so dreaded by all tennis players and golf players is caused in the first instance by the vibration or after-oscillation of the racket or club during the hitting action. For this reason, manufacturers of tennis rackets all over the world have been searching for constructional possibilities to attenuate these vibrations of the racket. The same is true for other sports equipment

by which a ball has to be hit with great force by a player, for instance a golf club (wood 1-3). While the clubs or rackets are differently formed according to the type of sport, they have in common that the player holds the equipment at a handle portion which is normally at the external end of a shaft, and via a more or less extended shaft transfers his high stroke force via the stroke portion of the equipment onto the ball. The kick-back and the oscillation of the equipment fully react on the player's arm. By the kick-back and the natural vibration of the racket, furtheron, striking energy is lost which could be used for the acceleration of the ball. Latest developments on the field of sports equipment, particularly tennis rackets and golf clubs, show that the aim of obtaining a real freedom from vibration and a good shock absorption and a good oscillation attenuation has as yet not nearly been reached.

Web site: [http://www.delphion.com/details?pn=US05454562\\_\\_](http://www.delphion.com/details?pn=US05454562__)

- **Tendon decompression device**

Inventor(s): Bartlett; Margaret D. (28273 Tampico Rd., Corvallis, OR 97330)

Assignee(s): none reported

Patent Number: 6,155,999

Date filed: May 26, 1999

Abstract: A tendon decompression device for alleviating tendinitis pains, such as **tennis elbow**. The device is comprised of an adhesive tape base strip which can be adhered to the skin. The base strip has a buckle subassembly at one end and a tensioning strap subassembly at the other end. A tensioning strap passes through an opening in the buckle, permitting the buckle subassembly to be pulled towards the tensioning strap subassembly. Locking means are provided for locking the tensioning strap in place once sufficient tension has been achieved.

Excerpt(s): This invention relates to a tendon decompression device useful in alleviating the pains associated with tendinitis, particularly that associated with "tennis elbow" and similar syndromes. Tennis elbow is a strain of the lateral forearm muscles or their tendinous attachments near their origin on the lateral epicondyle of the humerus. "Golfer's elbow" is a comparable syndrome involving forearm pronators and their attachments. According to the Merck Manual (15th edition, 1987, pages 1269 and 1270), treatment for alleviating the symptoms of **tennis elbow** involves wrapping a four inch strap tightly around the forearm, the strap being worn just distal to the elbow. Other devices similarly involve applying pressure to the forearm with various straps and bands wrapped around the forearm. Likewise, devices available for tendinitis at the knee involve straps applied circumferentially around the fibia.

Web site: [http://www.delphion.com/details?pn=US06155999\\_\\_](http://www.delphion.com/details?pn=US06155999__)

- **Tennis elbow brace**

Inventor(s): Applegate, Jr.; Leslie T. (Cincinnati, OH)

Assignee(s): Surgical Appliance Industries, Inc. (Cincinnati, OH)

Patent Number: 3,970,081

Date filed: January 28, 1974

Abstract: A support to be worn on the arm near the elbow joint for reducing pain in the elbow joint associated with the condition of **tennis elbow**. The support includes a tubular sleeve of one-way stretch fabric. An inelastic strap is stitched to the sleeve and encircles the arm. The strap passes through a metal loop and carries Velcro members for adjustably tensioning the strap and securing its end in place. A reversible pressure pad with one flat side and one dimpled side is located in a pocket in the sleeve disposed radially inwardly of the loop.

Excerpt(s): This invention relates to braces or supports and is particularly directed to a support for alleviating the pain associated with a condition known as "tennis elbow". **Tennis elbow** is a painful condition which seems to be caused by inflammation of the ligaments that join the two bones of the forearm--the radius and the ulna--to the two spurs, or epicondylitis, on the end of the humerus, or upper arm bone. In the past, various approaches have been taken to alleviate the pain associated with this condition. These have included cortisone shots, surgery, wearing copper bracelets, and wearing a tight narrow band below the elbow on the theory that compression of the arm decreases the tension on the forearm muscles. The principal object of the present invention is to provide a support, or brace, for relief of **tennis elbow**. This support can be worn by the athlete while participating in his chosen sport, for example, tennis, without interference with his play. The present brace has proven to be effective to alleviate the pain associated with **tennis elbow** and, in many cases, to completely eliminate it.

Web site: [http://www.delphion.com/details?pn=US03970081\\_\\_](http://www.delphion.com/details?pn=US03970081__)

- **Tennis elbow brace**

Inventor(s): Lancellotti; William E. (371 Broadway, Providence, RI 02903)

Assignee(s): none reported

Patent Number: 4,191,373

Date filed: December 6, 1976

Abstract: A brace adapted for wear by a tennis player for minimizing and/or preventing **tennis elbow** comprising in its most basic form a pair of discs adapted for respective generally nonslip compressive contact with that portion of the player's arm directly overlying the medial and lateral epicondyles thereof. The discs are generally of cup-shaped internal configuration having a somewhat compressible surface for engaging the player's skin. Bracket means enable the mounting of such discs in spaced opposition from each other and permit their independent rotation so as to follow the movements of the player's arm.

Excerpt(s): The arm or elbow injury most commonly referred to as "tennis elbow" is becoming increasingly commonplace with the recent upsurge in the popularity of tennis. Although the cause of such injury is not completely understood, it is fairly certain that the repeated impacts caused by the ball upon the racket and transmitted to the arm of the player is a basic cause of such injury. The symptoms normally include pain in the area of the elbow apparently caused by inflammation of the ligaments that serve to connect the two bones of the forearm, i.e., the radius and the ulnar, to the two spurs at the end of the humerus bone of the upper arm, that is, the medial and lateral condyles thereof. Other than rest or exercise to strengthen the arm muscles, **tennis elbow** is most normally treated by antiinflammatory drugs including aspirin, injection treatments of cortisone or even surgery to release the tension of the arm's tendons upon the aforementioned epicondyles. It would accordingly be desirable to eliminate or at

least reduce the frequency of this injury. Also due to the persistence of players having **tennis elbow** to continue to play, it is particularly important that the effects thereof be minimized or prevented and it is to this end that the device of the present invention is directed. The present inventor has accordingly determined that the effects of **tennis elbow** are moderated and in many cases prevented by the application of pressure to those portions of a tennis player's arm directly overlying the medial and lateral epicondyles. Such action apparently prevents or reduces the pulling action of the tendon connections with these bone spurs in such a manner that the inflammation thereof, which in turn causes the painful symptoms of **tennis elbow**, are reduced. Furthermore, by restricting the extremes of pronation and supination of the forearm and wrist which normally contribute to tendon extension, inflammation, and related **tennis elbow** symptoms are further reduced. It is accordingly the object of the present invention to provide a device for the minimization and/or prevention of **tennis elbow** in which a pair of disc-like members are mounted and contact the player's arm in use in such a manner so as to apply what is believed to be a tendon-relieving pressure upon the medial and lateral epicondyles of a tennis player while engaged in such sport.

Web site: [http://www.delphion.com/details?pn=US04191373\\_\\_](http://www.delphion.com/details?pn=US04191373__)

- **Tennis elbow brace**

Inventor(s): Richter; Howard S. (26 Suzanne Rd., Lexington, MA 02173)

Assignee(s): none reported

Patent Number: 4,763,901

Date filed: January 13, 1986

Abstract: A surgico-athletic device to be worn by an athlete for preventing or reducing inflammation, further injury and the discomfort of **tennis elbow** including upper and lower inelastic armbands (2, 4) which encircle the arm above and below the elbow is disclosed. There is an element (6) in the form of an inelastic strap connecting the armbands to control the distance between them and to limit the arm from being fully extended. The armbands are made of inelastic padded woven fabric and are of a length sufficient to encircle the arm. Hook and pile securing material (20, 22) permits the armbands to be adjustably tightened around the arm above the biceps and below the elbow. Liners (60) may be provided to prevent skin from being pinched or squeezed by fastening loops (28).

Excerpt(s): This invention pertains to surgico-athletic devices and more particularly is embodied in an arm brace which can be used to prevent or reduce the discomfort resulting from the condition commonly known as "tennis elbow". The common term "tennis elbow" refers to a painful arm or elbow condition most often experienced by tennis players but also by racketball players, platform tennis players, people who throw baseballs, softballs, or footballs, javelin throwers, and others. Although the cause of this disorder is not completely understood, it is likely that repeated impacts of a ball upon the racket are transmitted to the arm of a player, thereby causing the trauma. The offending motions are probable twisting of the forearm and sudden extension of the elbow joint into a fully extended and locked position.

Web site: [http://www.delphion.com/details?pn=US04763901\\_\\_](http://www.delphion.com/details?pn=US04763901__)

- **Tennis elbow splint**

Inventor(s): Spiro; Irving (7925 West Drive, North Bay Village, FL 33141)

Assignee(s): none reported

Patent Number: 4,014,327

Date filed: April 16, 1976

Abstract: A **tennis elbow** splint having a metal bar encased in an elongated pocket that is fastened at each end to a band, one band adapted to extend about the wrist of the user and a second band adapted to extend about the forearm with the metal bar engaging the palm side of the forearm. Each of the bands being provided with a metal loop at one end and a Velcro fastening strap at the other end whereby the bands rimly engage the wrist and forearm of the user while playing tennis to provide relief to the user having **tennis elbow** as well as preventing the user from developing **tennis elbow**.

Excerpt(s): This invention relates generally to orthopedic splints and is more particularly directed to one for use by tennis players who have **tennis elbow** or wish to prevent developing this ailment while playing tennis. At the present time, a person who is afflicted with epicondylitis commonly known as "tennis elbow" treats it by refraining from participating in the sport, and thereby resting the torn muscles concerned and permitting the abating of the inflammation of the ligaments that join the two bones of the forearm, namely the radius and the ulna, to the two spurs or epicondyles on the end of the humerus or upper arm bone. He will take certain medication such as aspirin, injections of cortisone, etc., and hope that in due time he will be able to play tennis again. Those persons having **tennis elbow**, whose pain may not be severe and who wish to play tennis, will wear a tight elastic band about his forearm below his elbow to decrease the tension on the forearm muscles. This type of device has proved inadequate to prevent and relieve a person with tendonitis, strained tendons, or myositis, (inflamed muscles.) In addition, the elastic band prevents him from being able to stroke the tennis racquet properly and thereby affecting his ability to participate in this sport. The present invention contemplates avoiding the latter objection to the use of a tight elastic band as well as providing the user with relief from **tennis elbow** while playing if he is afflicted by it in addition to the prevention of acquiring **tennis elbow**. The present invention when positioned properly on a person's wrist and forearm provides such support as to strengthen the wrist and forearm muscles of the user who now acquires the ability to provide a firmer grip on the tennis racquet for a more powerful swing without allowing the muscles to twist away from the radial bone. The user of my splint is able to play longer than without it and not be as fatigued or have a tired feeling in his forearm.

Web site: [http://www.delphion.com/details?pn=US04014327\\_\\_](http://www.delphion.com/details?pn=US04014327__)

- **Tennis racket frame**

Inventor(s): Matsushita; Hiroomi (Kobe, JP), Niwa; Kunio (Kobe, JP), Yamaguchi; Tetsuo (Nishinomiya, JP)

Assignee(s): Sumitomo Rubber Industries, Ltd. (Hyogo, JP)

Patent Number: 5,114,145

Date filed: October 10, 1990

Abstract: The tennis racket frame according to the present invention has a total weight of 230-300 g and total length of 52-67 cm and a periodic damping ratio of 0.5-4.0%, which is constituted of a fiber reinforced resin composed of polyamide resin reinforced by a continuous fiber and/or long fiber reinforcing material. A resin layer containing a non-woven fabric may be provided at the inside, outside or/and in the middle of the fiber reinforced resin layer. Because of this structure, the tennis racket frame of the present invention can be light in weight and compact in size with a large periodic damping property, making it possible to avoid **tennis elbow**.

Excerpt(s): The present invention generally relates to a frame member for a tennis racket, and more particularly to a frame member suitable for use in a tennis racket designed for children or players of slight muscular power which is made of a fiber reinforced resin compact in size and light weight, but having superior strength and vibration absorbing properties. The recent increasing popularity of tennis brings an early start of play even from children, and therefore a compact tennis racket light in weight is strongly desired for such small players, particularly a tennis racket which does not promote **tennis elbow** and with a high vibration absorbing property is desired. This also applies to a tennis racket for players having slight power. In general, a frame member for a tennis racket has conventionally been made of a fiber reinforced resin which is composed of, as is known, (1) a continuous fiber/resin matrix or (2) a short or chopped fiber/resin matrix.

Web site: [http://www.delphion.com/details?pn=US05114145\\_\\_](http://www.delphion.com/details?pn=US05114145__)

- **Tennis training device**

Inventor(s): Racz; Gabor B. (255 Robineau Rd., Syracuse, NY 13207)

Assignee(s): none reported

Patent Number: 4,150,821

Date filed: July 25, 1977

Abstract: A tennis training aid that also operates to reduce the likelihood of developing **tennis elbow**. The training aid is comprised of a flexible strap that extends from a fitting on the head of the player's racquet to a member engaging his wrist. The fitting is attached to the racquet head at approximately its widest transverse point. The connecting strap is an aid in establishing a desired angular relation between the player's arm and the longitudinal axis of the racquet. At the same time, the connecting strap minimizes the possibility of stretching or overextending the extensor muscles of the player's forearm which stretching frequently leads to the injury known as **tennis elbow**.

Excerpt(s): This invention relates generally to athletic equipment and has particular reference to a novel device for teaching tennis, the device also being operable to reduce the likelihood of **tennis elbow**. Many tennis instructors believe that the head of the racquet should be positioned above the player's wrist when hitting ground strokes and volleys. This means that the angle between the player's forearm and the long axis of the racquet will be from 90.degree. to something greater than 90.degree. but less than 180.degree. To hold the racquet in this manner is often difficult for beginning tennis players who have not had a sufficient amount of practice and may also lack the required muscular development. Various devices have been proposed for helping a beginning player to hold the racquet in the proper manner. Two such devices are disclosed in U.S. Pat. Nos. 3,693,973 to W. H. Wattenburg and 3,858,881 to Hurwitz. The Wattenburg

trainer is a totally inflexible, splint-like device that most novices would find very difficult to use.

Web site: [http://www.delphion.com/details?pn=US04150821\\_\\_](http://www.delphion.com/details?pn=US04150821__)

- **Therapeutic forearm appliance having pressure pad containing parallel chambers**

Inventor(s): Sebastian; Peter R. (Salisbury, MD)

Assignee(s): Safeguard Industrial Corporation (Leesport, PA)

Patent Number: 5,372,575

Date filed: February 16, 1993

Abstract: A therapeutic wrap is securable in an operative orientation around the forearm for relieving stress of the myofascial structures caused by repetitive motion and vibration trauma, such as "tennis elbow". The wrap has a circumference sufficient to encircle the forearm of a user and includes a pocket for accommodating a pressure pad having plural parallel aligned elongate chambers. The parallel aligned chambers of the pressure pad extend lengthwise in a direction parallel to a longitudinal axis of the forearm when the appliance is secured in the operative orientation. The pressure pad may be formed of an air bladder having plural parallel air chambers and a valve mechanism for allowing the user to increase an air pressure contained within the air bladder chambers.

Excerpt(s): This invention generally relates to a therapeutic appliance for application to the forearm, and more particularly, to a therapeutic wrap having a pressure pad for applying a counterforce pressure to the forearm to relieve stress conditions of the myofascial structure, for example "tennis elbow". The forearm of the human upper extremity is susceptible to injury of myofascial/osseous structures induced by repetitive motion and vibration trauma. The muscular structures as well as their fascial and tendon attachments are frequently the site of pain resulting from muscle tightness, restricted motion and/or inflammation. A common example of this condition is lateral epicondylitis, commonly known as "tennis elbow". Tennis players, golfers and laborers employing tools, such as repeated hammering and twisting of a screwdriver, are among those frequently affected. Bracing of the affected area is one of the modalities utilized in the treatment of these conditions.

Web site: [http://www.delphion.com/details?pn=US05372575\\_\\_](http://www.delphion.com/details?pn=US05372575__)

- **Therapeutic thermal wrap kit**

Inventor(s): Fortney; Donald (P.O. Box 195, Clarksville, MD 21029)

Assignee(s): none reported

Patent Number: 5,111,810

Date filed: December 11, 1990

Abstract: The present invention relates to a therapeutic thermal wrap kit to be used for treatment of body discomfort, such as muscle and/or ligament stress (e.g., **tennis elbow**, tendonitis of the knee, chronic sore shoulder, etc.). The therapeutic thermal wrap kit comprises a thermal compress, a holder for the compress, a container around which the holder containing the thermal compress is wrapped, and an insulated bag in which the assembled components are placed and transported. The container may contain a



substance, liquid at 25.degree. C. which, along with the thermal compress, can be thermally adjusted to a temperature of from -20.degree. to 120.degree. C. The kit remains at a therapeutically effective temperature for at least 10 hours due to the synergy of the four elements in combination. When needed, the holder containing the compress and the container are removed from the insulated bag, the container is then separated from the holder, and the compress is applied to the affected body part using the holder. Therapeutic effectiveness is immediate, since the wrap is at an effective temperature and is easily conformed to the shape of the affected body part.

Excerpt(s): It is commonly accepted medical opinion that body parts stressed during exercise, such as the elbow or knee, respond well to the immediate application of cold. Oftentimes, persons suffering from muscle or ligament stress will wait until they return home to apply thermal treatment. For the affected member, waiting for many minutes or perhaps hours causes the application of thermal treatment to lose much of its therapeutic value. In the past, persons suffering from chronic stress of muscles or ligaments who have attempted to bring some form of thermal treatment with them to the site of the exercise activity have resorted to ice or a commercially available thermal compress. In the case of ice, it is heavy, awkward and messy to use. It does not easily conform to the shape of the body part and quickly melts. In the case of the thermal compress, when it is removed from an external source of heat or cold, it quickly returns to ambient temperatures. Many individuals suffer from chronic discomfort in one or more extremities such as that caused by muscle injury, tendinitis, or permanent ligament damage. The typical amateur athlete, who desires the benefits of exercise, but does not necessarily wish to participate in organized, competitive athletics, and thus, does not have professional medical or training help readily available, is often discouraged from exercising because of the discomfort caused by minor, yet seemingly chronic, injuries. Surprisingly, no effective, portable devices for convenient, immediate thermal treatment of exercise-related injuries are commercially available in spite of the long-felt need for just such a device.

Web site: [http://www.delphion.com/details?pn=US05111810\\_\\_](http://www.delphion.com/details?pn=US05111810__)

- **Wrist and forearm conditioner and exerciser**

Inventor(s): Walls; Billy D. (Box J, Mondamin, IA 51557)

Assignee(s): none reported

Patent Number: 4,239,208

Date filed: September 27, 1978

Abstract: A wrist and forearm conditioner and exerciser useful for conditioning and strengthening the wrist and forearm for such activities as golf, tennis and handball, thereby decreasing the susceptibility to the condition called "tennis elbow". The exercise comprises a handle similar to that of a tennis racquet attached to a handle carrier, a frame rotatably mounting the carrier on a wall, and a resilient member mounted on the frame and tensioned increasingly by the carrier as the handle is rotated.

Excerpt(s): I have not seen an exerciser on the market for this purpose and so it is an object of this invention to provide such an exerciser made in a simple and inexpensive way for mass-affordability. A second objective is to provide an exerciser which can be easily repaired and more particularly one which uses an inexpensive elongated heavy rubber band for providing the resistance to the exercise and in which the rubber band can be replaced if necessary by mounting it in a box having a removable cover. A

particular goal of this invention is to provide a wrist and forearm conditioner and exerciser useful for conditioning and strengthening the wrist and forearm thereby resisting the condition called "tennis elbow" and furthermore strengthening and conditioning such anatomy for other sporting activities such as golf and handball and comprising a handle similar to that of a tennis racquet attached to a handle carrier, a frame rotatably mounting said carrier to a wall, and resilient means mounted on the frame and tensioned increasingly by the carrier as the handle is rotated.

Web site: [http://www.delphion.com/details?pn=US04239208\\_\\_](http://www.delphion.com/details?pn=US04239208__)

## Patent Applications on Tennis Elbow

As of December 2000, U.S. patent applications are open to public viewing.<sup>6</sup> Applications are patent requests which have yet to be granted. (The process to achieve a patent can take several years.) The following patent applications have been filed since December 2000 relating to tennis elbow:

- **Custom molded tennis elbow pad assembly**

Inventor(s): Darcey, Thomas D.; ( Mooresville, NC)

Correspondence: Joel Petrow; Chief Patent Counsel; Smith & Nephew, INC.; 1450 Brooks Road; Memphis; TN; 38116; US

Patent Application Number: 20020099316

Date filed: November 30, 2000

Abstract: A **tennis elbow** pad assembly product for relieving the symptoms of lateral epicondylitis is disclosed. The **tennis elbow** pad assembly product includes an outer pouch formed of a moisture-impervious material. A pad is positioned in the pouch in substantially moisture-free conditions and sealed therein against entry of moisture until use. The pad is adapted for being positioned against and molded onto a forearm in the region of the elbow for lying in closely-conforming relation against and applying radially-directed pressure to the common tendon attachment and grasping and supination muscles associated with the radial-humeral joint and the lateral epicondyle of a forearm and hardened into a rigid structure for therapeutic use. The pad includes an initially flexible substrate impregnated or coated with a reactive system. The system remains stable when maintained in substantially moisture-free conditions and hardens upon exposure to moisture to form a rigid, self-supporting structure having a shape that conforms to the forearm to which the pad is molded during curing. The pad also includes a flexible outer layer enclosing the substrate and a support cooperating with the pad for maintaining the pad in its closely-conforming position against the forearm.

Excerpt(s): This invention relates to a custom-molded pad for relief of the symptoms of lateral epicondylitis, or "tennis elbow." Also known as tendonitis or tenosynovitis, **tennis elbow** is the inflammation of the tendon or tendon sheath located at the lateral epicondyle. **Tennis elbow** is primarily caused by continued stress on the grasping and supination muscles of the forearm. Although the backhand swing in tennis is an activity commonly associated with aggravating the onset of lateral epicondylitis, there are several other activities that can cause the condition, such as continuous use of hand tools, repetitive painting with a brush or roller, or carrying and operating a chain saw

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<sup>6</sup> This has been a common practice outside the United States prior to December 2000.

over extended periods of time. As discussed below, each of these activities require repeated use of the same muscle groups, which often leads to overuse and the inflammation and tearing associated with **tennis elbow**. Although some severe or chronic cases of **tennis elbow** may require use of anti-inflammatory drugs or surgical intervention, the vast majority of cases are resolved using much simpler methods. Standard treatment for a typical case of **tennis elbow** involves little more than applying ice to and resting the affected area, and alleviating any associated pain. In many cases, an external device will also be used to support the affected muscles and tendons during normal activities, thereby reducing the risk of further injury while allowing time for the damaged area to heal. While prompt diagnosis and treatment of lateral epicondylitis can minimize the pain associated with the condition and reduce the extent of treatment needed, prior art methods available for treatment often fail to provide adequate relief. A typical external elbow wrap used to treat **tennis elbow** consists of nothing more than an elastic strap which extends around the forearm. This type of prior art strap does not provide concentrated support directly over the injured area. Those devices which do attempt to direct support specifically to the injured region have limited effectiveness in that they provide additional padding over the inflamed area, yet fail to provide a secure, custom fit which addresses the unique anatomical needs of the individual wearer. Furthermore, the additional padding provided is often a soft, thick foam pad, which will not conform to the shape of the forearm without applying an increased amount of pressure over the injured area to cause the foam to compress against the forearm.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **ELBOW BRACE WITH MASSAGE BALL AND TOPICAL PRODUCT DISPENSER**

Inventor(s): Rogalski, Roger P.; (Gardnerville, NV)

Correspondence: Sonya C Harris; P O Box 2607; Fairfax; VA; 22031; US

Patent Application Number: 20020173738

Date filed: May 16, 2001

Abstract: The present invention offers a brace for the treatment of **tennis elbow** and similar muscular disorders whereby both massage therapy and the continuous application of a fluid, topical lotion is provided. The brace is attached to the arm of a wearer such that a massage ball protruding from one end of the brace is in contact with the affected area of the arm such that as the arm is moved the massage ball exerts massaging pressure on the arm while simultaneously transferring a fluid, topical lotion from a fluid reservoir to the affected area of the arm.

Excerpt(s): The present invention relates to orthotic devices, especially as they relate to sports injuries. More particularly, the invention comprises a brace to aid in the relief of lateral epicondylitis, better known as **tennis elbow**, or other muscular pains, through support, pressure, massage and the application of topical lotions. Repetitive motion sports injuries have long been a problem suffered by athletes. One of the most common of sports related repetitive motion injuries is lateral epicondylitis, or **tennis elbow**. A brace is often used to help reduce the pain and swelling from these injuries, with many variations of braces having been expounded over the years. U.S. Pat. No. 6,110,135, issued to Stephen R. Madow, et. al., on Aug. 29, 2000, presents an ELBOW BRACE WITH MOVABLE SUPPORT, in which a flexible lamination of Airpreene.TM., providing heat retention, compression and breathability, lined with Coolmax.TM., which allows wicks perspiration away from the skin, keeping the area dry. A movable support,

external to the flexible lamination, provides specific pressure where needed. By contrast, the present invention provides massaging pressure by the use of a massage ball and also provides continuous application of a topical lotion from a reservoir within the brace.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **Forearm support band with direct pressure monitoring**

Inventor(s): Meyer, Nicholas Joseph; (Plymouth, MN)

Correspondence: Nicholas J. Meyer, MD; 4210 Evergreen Lane; Plymouth; MN; 55441; US

Patent Application Number: 20030045826

Date filed: August 28, 2002

Abstract: The forearm support band with direct pressure monitoring provides a means by which patients may optimize treatment of medial or lateral epicondylitis (golfer's elbow or **tennis elbow**, respectively) with the use of optimal pressure application. Unlike previous forearm support bands, this band allows patients to directly read the pressure of application and appropriately adjust the band's tightness. This results in the correct amount of pressure to the forearm musculature, thereby minimizing risks and gaining optimal therapeutic benefits.

Excerpt(s): This invention relates to the use of a compressive band for the relief of either medial or lateral epicondylitis ("golfer's elbow" or "tennis elbow," respectively), but may be extrapolated to other forms of tendonitis. Specifically, this invention optimizes the application pressure of the compressive band through direct measurement of said pressure, allowing the user to apply the band to the most effective pressure and avoid ineffective (low) pressure or excessive (high) pressure. The forearm support band (also known as the **tennis elbow** brace, forearm counterforce brace, or **tennis elbow** band) is currently produced in a variety of designs. At its basis, the forearm support band (hereafter FSB) is designed to apply compression to the forearm to alleviate symptoms associated with lateral epicondylitis or **tennis elbow**. As well, the FSB may be utilized for symptoms associated with medial epicondylitis or golfer's elbow. This goal of compression is achieved through application of a band designed of varying materials, often fastened with hook and loop material, about the proximal forearm. This creates compression of the forearm during activities that aggravate the symptoms associated with tennis or golfer's elbow. While the mechanism of action of the FSB is not completely known, nor has its efficacy been proven, anecdotal evidence exists as to the clinical effectiveness of the FSB in the treatment of tennis and golfer's elbow. Two general designs exist for the FSB. One involves a simple circumferential band that applies equal pressure circumferentially around the forearm; the other applies eccentric pressure over the area of pathology (if applied correctly) through an air pillow or bladder.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **Sports racket having a uniform string structure**

Inventor(s): Brandt, Richard A.; (New York, NY)

Correspondence: Salans Hertzfeld Heilbronn Christy & Viener; 620 Fifth Avenue; New York; NY; 10020; US

Patent Application Number: 20020098925

Date filed: October 4, 2001

Abstract: A sports racket, for tennis and the like sports, has an elongated handle attached to a head having a racket face, which is spanned by a uniform string structure. The head has four sides, forming a non-elliptical shape, in which the opposite sides are substantially parallel. Longitudinal strings, all of which are substantially identical in length and run essentially parallel to each other, and transversal strings, all of which are substantially identical in length and run essentially parallel to each other and perpendicular to the longitudinal axis, span the racket face. The racket has a larger racket face than conventional rackets, while maintaining the length and weight measurements of conventional rackets, resulting in a very large sweet spot and more good hits. The racket has maximally long strings at all points on the racket face and strings substantially identical in length at all points on the racket face resulting in a uniformity of response for off-center hits, an increase in the ball rebound speed, a decrease in angular deflection for off-center hits, and the ability to set the tension of the strings such that they vibrate with the same frequency. The racket has a greater moment of inertia than conventional rackets, resulting in reduced racket rotation and a reduction of injuries to players, such as "tennis elbow".

Excerpt(s): The present invention relates to a sports racket. In the preferred embodiment, the present invention relates to a tennis racket having a uniform string structure such that all horizontal (transversal) strings are of equal length and all vertical (longitudinal) strings are of equal length. A range of tennis rackets exist which have been designed to provide a more uniform, powerful, forgiving and controlled response to all hits, and a larger optimal ("sweet spot") area of the racket face. Typically, when a tennis player swings his racket to hit the ball, he assumes that the impact will be in the sweet spot of the racket face, and he swings accordingly. If the impact location on a conventional racket is not on the sweet spot, or off-center, the ball encounters strings of different length and the resultant ball trajectory is probably not going to be the desired one. Errors such as hits into the net, beyond the baseline, or too near the opponent, will often result. Further, balls hit off-center encounter strings of lengths that are different from one another and different from the lengths of the central strings. The ball will rebound with less speed than, and not consistent with, balls hit near the center of the racket face. Thus, for a given racket swing, the hit ball velocity is highly dependent on where on the face of the racket the ball is hit.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **Tennis elbow support comprising tendon pad**

Inventor(s): Taylor, Richard Gregory; (Cincinnati, OH), Weaver, Edward Leonard II; (Milford, OH)

Correspondence: Norris McLaughlin & Marcus, P.A.; P O Box 1018; Somerville; NJ; 08876

Patent Application Number: 20030032912

Date filed: August 6, 2002

Abstract: A **tennis elbow** support comprising a main body having an opening and a tendon pad having a pad base and a raised portion that projects from the pad base. The tendon pad is inserted into the opening so that the raised portion projects outwardly from a bottom surface of the main body. The main body can be releasably secured in a substantially circular configuration so that the support can be placed around the forearm of a user and the **tennis elbow** support can be tightened around the arm of the user with tendon pad in contact with the arm so that straight-line pressure is applied across the extensor muscle and tendon.

Excerpt(s): This application claims the benefit of U.S. Provisional Application No. 60/310,751, filed Aug. 8, 2001. The invention pertains to a **tennis elbow** support comprising a tendon pad having a raised portion, and optionally, a protrusion that projects substantially about the center from the raised portion. The invention provides relief to the user for the pain and discomfort associated with Lateral Epicondylitis and other injuries to the arm and joints of a user. The **tennis elbow** support is generally in the shape of a strap having a main body, a tendon pad, a top cover assembly comprising securing means and a hook tab. The hook tab can be releasably fastened to an upper surface of the main body and/or the securing means of the top cover assembly in a manner such that the **tennis elbow** support can be shaped into a substantially circular form and slipped on to an appendage of a user, generally the forearm, with the tendon pad in contact with the outside of the user's forearm.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

## Keeping Current

In order to stay informed about patents and patent applications dealing with tennis elbow, you can access the U.S. Patent Office archive via the Internet at the following Web address: <http://www.uspto.gov/patft/index.html>. You will see two broad options: (1) Issued Patent, and (2) Published Applications. To see a list of issued patents, perform the following steps: Under "Issued Patents," click "Quick Search." Then, type "tennis elbow" (or synonyms) into the "Term 1" box. After clicking on the search button, scroll down to see the various patents which have been granted to date on tennis elbow.

You can also use this procedure to view pending patent applications concerning tennis elbow. Simply go back to <http://www.uspto.gov/patft/index.html>. Select "Quick Search" under "Published Applications." Then proceed with the steps listed above.

## CHAPTER 5. BOOKS ON TENNIS ELBOW

### Overview

This chapter provides bibliographic book references relating to tennis elbow. In addition to online booksellers such as [www.amazon.com](http://www.amazon.com) and [www.bn.com](http://www.bn.com), excellent sources for book titles on tennis elbow include the Combined Health Information Database and the National Library of Medicine. Your local medical library also may have these titles available for loan.

### Book Summaries: Online Booksellers

Commercial Internet-based booksellers, such as Amazon.com and Barnes&Noble.com, offer summaries which have been supplied by each title's publisher. Some summaries also include customer reviews. Your local bookseller may have access to in-house and commercial databases that index all published books (e.g. Books in Print®). **IMPORTANT NOTE:** Online booksellers typically produce search results for medical and non-medical books. When searching for "tennis elbow" at online booksellers' Web sites, you may discover non-medical books that use the generic term "tennis elbow" (or a synonym) in their titles. The following is indicative of the results you might find when searching for "tennis elbow" (sorted alphabetically by title; follow the hyperlink to view more details at Amazon.com):

- **A Doctor's Answer to Tennis Elbow** by Beckett and Bender, Fred Howorth; ISBN: 0809257912;  
<http://www.amazon.com/exec/obidos/ASIN/0809257912/icongroupinterna>
- **Shoulder Bursitis Tennis Elbow Forearm Fatigue** by William M.D. Hunter; ISBN: 9996673693;  
<http://www.amazon.com/exec/obidos/ASIN/9996673693/icongroupinterna>
- **Sports Report - Tennis Elbow: Index of New Information With Authors, Subjects & References** by Hugo H. Bronsen (1994); ISBN: 1559147385;  
<http://www.amazon.com/exec/obidos/ASIN/1559147385/icongroupinterna>
- **Tennis and Racquetball Players Self-Guide to Injury-Free Fun (How to Avoid and Treat Tennis Elbow and Other Court Injuries)** by Michael and Nacinovich, John A. Nacinovich; ISBN: 0914778285;  
<http://www.amazon.com/exec/obidos/ASIN/0914778285/icongroupinterna>

- **The Doctor's Guide to Tennis Elbow, Trick Knee, and Other Miseries of the Weekend Athlete** by Leon Root, Thomas Kiernan; ISBN: 0679509771;  
<http://www.amazon.com/exec/obidos/ASIN/0679509771/icongroupinterna>
- **The Pigeon With the Tennis Elbow** by Matthew F. Christopher; ISBN: 0316139661;  
<http://www.amazon.com/exec/obidos/ASIN/0316139661/icongroupinterna>

## Chapters on Tennis Elbow

In order to find chapters that specifically relate to tennis elbow, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and tennis elbow using the "Detailed Search" option. Go to the following hyperlink: <http://chid.nih.gov/detail/detail.html>. To find book chapters, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Book Chapter." Type "tennis elbow" (or synonyms) into the "For these words:" box. The following is a typical result when searching for book chapters on tennis elbow:

- **Chapter 57: Sports Injuries**

Source: in Berkow, R., ed. *The Merck Manual of Medical Information: Home Edition* (online version). Rahway, NJ: Merck and Company, Inc. 2000. 15 p.

Contact: Available online from Merck and Company, Inc. (800) 819-9456. Website: [www.merck.com/pubs/mmanual\\_home/contents.htm](http://www.merck.com/pubs/mmanual_home/contents.htm). Also available from your local book store. PRICE: \$29.95 plus shipping.

Summary: This chapter provides the general public and people who experience sports related injuries with information on their causes, diagnosis, and treatment. Sports injuries can be attributed to faulty training methods; structural abnormalities; and weakness of the muscles, tendons, and ligaments. Faulty training methods, that is, the failure of the exerciser to allow for adequate recovery after a workout or to stop exercising when pain develops, are the most common cause of muscle and joint injuries. Allowing at least 2 days between intensive workouts or alternating workouts that stress different parts of the body can help prevent chronic injury. Structural abnormalities can make a person susceptible to a sports injury by stressing certain parts of the body more than others. Muscles, tendons, and ligaments that are too weak or tight for the exercise being attempted may be injured. Exercising against progressively greater resistance strengthens muscles and can help prevent injuries. Diagnosis of a sports or other musculoskeletal injury is based on the medical history, a physical examination, and tests. Sports injuries can be prevented by warming up before beginning strenuous exercise. Cooling down after strenuous exercise is helpful for preventing dizziness. Orthotics can often correct foot problems that make a person susceptible to injury. Immediate treatment for almost all sports injuries involves rest, ice, compression, and elevation. Corticosteroid injections relieve pain and reduce swelling. Physical therapists use various modalities to treat sports injuries. Although the activity or sport that caused the injury should be avoided until it has healed, substituting activities that do not stress the injured part is preferable to abstaining from all physical activity. The chapter also describes common sports injuries and highlights their symptoms, diagnosis, and treatment. Injuries include stress fractures of the foot, anterolateral and posteromedial shin splints, popliteus tendinitis, Achilles tendinitis, runner's knee, hamstring injury,



weight lifter's back, backhand and forehand **tennis elbow**, and rotator cuff tendinitis. 5 figures.

- **Section Three: Elbow and Forearm**

Source: in Greene, W.B., Ed. Essentials of Musculoskeletal Care. 2nd ed. Rosemont, IL: American Academy of Orthopaedic Surgeons (AAOS). 2001. p. 162-197.

Contact: Available from American Academy of Orthopaedic Surgeons (AAOS). 6300 North River Road, Rosemont, IL 60018-4262. (800) 626-6726 (toll-free) or (847) 823-7186. Fax (800) 823-8025 (toll-free) or (847) 823-8025. E-mail: [custserv@aaos.org](mailto:custserv@aaos.org). Website: [www.aaos.org](http://www.aaos.org). PRICE: \$105.00 for nonmembers; \$90.00 AAOS members; \$80.00 for residents; plus shipping and handling. ISBN 0892032170.

Summary: This section of a book on musculoskeletal care provides health professionals with information on common conditions affecting the elbow and forearm, including acute and chronic or repetitive injuries and degenerative, inflammatory, or idiopathic conditions. The section begins with information on the principles of evaluating and examining a patient presenting with an elbow or forearm complaint, focusing on inspection, palpation, range of motion, and muscle testing. This is followed by a description of arthritis and dislocation of the elbow; epicondylitis and radial tunnel syndrome; fracture of the distal humerus, olecranon, and radial head; olecranon bursitis; rupture of the distal biceps tendon; and ulnar nerve compression. Information includes synonyms for and red flags associated with each condition; the definition, clinical symptoms, diagnosis, differential diagnosis, adverse outcomes, and treatment of the condition; diagnostic tests; and adverse treatment outcomes. Other topics include injections for **tennis elbow** and aspiration for olecranon bursa. 32 figures.



## CHAPTER 6. PERIODICALS AND NEWS ON TENNIS ELBOW

### Overview

In this chapter, we suggest a number of news sources and present various periodicals that cover tennis elbow.

### News Services and Press Releases

One of the simplest ways of tracking press releases on tennis elbow is to search the news wires. In the following sample of sources, we will briefly describe how to access each service. These services only post recent news intended for public viewing.

#### PR Newswire

To access the PR Newswire archive, simply go to <http://www.prnewswire.com/>. Select your country. Type “tennis elbow” (or synonyms) into the search box. You will automatically receive information on relevant news releases posted within the last 30 days. The search results are shown by order of relevance.

#### Reuters Health

The Reuters’ Medical News and Health eLine databases can be very useful in exploring news archives relating to tennis elbow. While some of the listed articles are free to view, others are available for purchase for a nominal fee. To access this archive, go to <http://www.reutershealth.com/en/index.html> and search by “tennis elbow” (or synonyms). The following was recently listed in this archive for tennis elbow:

- **Tennis elbow can be treated with less pain**  
Source: Reuters Health eLine  
Date: July 30, 2003
- **FDA clears HealthTronics' tennis elbow therapy**  
Source: Reuters Health eLine  
Date: March 17, 2003

- **US study describes new 'tennis elbow' treatment**  
Source: Reuters Health eLine  
Date: December 04, 2002
- **Forget tennis elbow, what about rock star finger?**  
Source: Reuters Health eLine  
Date: October 09, 2002
- **'Wait-and-see' often OK for tennis elbow**  
Source: Reuters Health eLine  
Date: February 22, 2002
- **Acupuncture serves up a cure for tennis elbow**  
Source: Reuters Health eLine  
Date: November 06, 2000
- **Fatty acids, antioxidants may help 'tennis elbow'**  
Source: Reuters Health eLine  
Date: April 26, 2000
- **Motor Performance Decreased Bilaterally In Patients With Chronic, Unilateral Tennis Elbow**  
Source: Reuters Medical News  
Date: October 17, 1997
- **Good Old Rest Best Treatment For Tennis Elbow Recommended**  
Source: Reuters Medical News  
Date: May 29, 1997

### **The NIH**

Within MEDLINEplus, the NIH has made an agreement with the New York Times Syndicate, the AP News Service, and Reuters to deliver news that can be browsed by the public. Search news releases at [http://www.nlm.nih.gov/medlineplus/alphanews\\_a.html](http://www.nlm.nih.gov/medlineplus/alphanews_a.html). MEDLINEplus allows you to browse across an alphabetical index. Or you can search by date at the following Web page: <http://www.nlm.nih.gov/medlineplus/newsbydate.html>. Often, news items are indexed by MEDLINEplus within its search engine.

### **Business Wire**

Business Wire is similar to PR Newswire. To access this archive, simply go to <http://www.businesswire.com/>. You can scan the news by industry category or company name.

### **Market Wire**

Market Wire is more focused on technology than the other wires. To browse the latest press releases by topic, such as alternative medicine, biotechnology, fitness, healthcare, legal, nutrition, and pharmaceuticals, access Market Wire's Medical/Health channel at [http://www.marketwire.com/mw/release\\_index?channel=MedicalHealth](http://www.marketwire.com/mw/release_index?channel=MedicalHealth). Or simply go to Market Wire's home page at <http://www.marketwire.com/mw/home>, type "tennis elbow" (or synonyms) into the search box, and click on "Search News." As this service is technology

oriented, you may wish to use it when searching for press releases covering diagnostic procedures or tests.

### Search Engines

Medical news is also available in the news sections of commercial Internet search engines. See the health news page at Yahoo ([http://dir.yahoo.com/Health/News\\_and\\_Media/](http://dir.yahoo.com/Health/News_and_Media/)), or you can use this Web site's general news search page at <http://news.yahoo.com/>. Type in "tennis elbow" (or synonyms). If you know the name of a company that is relevant to tennis elbow, you can go to any stock trading Web site (such as <http://www.etrade.com/>) and search for the company name there. News items across various news sources are reported on indicated hyperlinks. Google offers a similar service at <http://news.google.com/>.

### BBC

Covering news from a more European perspective, the British Broadcasting Corporation (BBC) allows the public free access to their news archive located at <http://www.bbc.co.uk/>. Search by "tennis elbow" (or synonyms).

### Academic Periodicals covering Tennis Elbow

Numerous periodicals are currently indexed within the National Library of Medicine's PubMed database that are known to publish articles relating to tennis elbow. In addition to these sources, you can search for articles covering tennis elbow that have been published by any of the periodicals listed in previous chapters. To find the latest studies published, go to <http://www.ncbi.nlm.nih.gov/pubmed>, type the name of the periodical into the search box, and click "Go."

If you want complete details about the historical contents of a journal, you can also visit the following Web site: <http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi>. Here, type in the name of the journal or its abbreviation, and you will receive an index of published articles. At <http://locatorplus.gov/>, you can retrieve more indexing information on medical periodicals (e.g. the name of the publisher). Select the button "Search LOCATORplus." Then type in the name of the journal and select the advanced search option "Journal Title Search."



# APPENDICES





## APPENDIX A. PHYSICIAN RESOURCES

### Overview

In this chapter, we focus on databases and Internet-based guidelines and information resources created or written for a professional audience.

### NIH Guidelines

Commonly referred to as “clinical” or “professional” guidelines, the National Institutes of Health publish physician guidelines for the most common diseases. Publications are available at the following by relevant Institute<sup>7</sup>:

- Office of the Director (OD); guidelines consolidated across agencies available at <http://www.nih.gov/health/consumer/conkey.htm>
- National Institute of General Medical Sciences (NIGMS); fact sheets available at <http://www.nigms.nih.gov/news/facts/>
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines: <http://www.nlm.nih.gov/medlineplus/healthtopics.html>
- National Cancer Institute (NCI); guidelines available at <http://www.cancer.gov/cancerinfo/list.aspx?viewid=5f35036e-5497-4d86-8c2c-714a9f7c8d25>
- National Eye Institute (NEI); guidelines available at <http://www.nei.nih.gov/order/index.htm>
- National Heart, Lung, and Blood Institute (NHLBI); guidelines available at <http://www.nhlbi.nih.gov/guidelines/index.htm>
- National Human Genome Research Institute (NHGRI); research available at <http://www.genome.gov/page.cfm?pageID=10000375>
- National Institute on Aging (NIA); guidelines available at <http://www.nia.nih.gov/health/>

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<sup>7</sup> These publications are typically written by one or more of the various NIH Institutes.

- National Institute on Alcohol Abuse and Alcoholism (NIAAA); guidelines available at <http://www.niaaa.nih.gov/publications/publications.htm>
- National Institute of Allergy and Infectious Diseases (NIAID); guidelines available at <http://www.niaid.nih.gov/publications/>
- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS); fact sheets and guidelines available at <http://www.niams.nih.gov/hi/index.htm>
- National Institute of Child Health and Human Development (NICHD); guidelines available at <http://www.nichd.nih.gov/publications/pubskey.cfm>
- National Institute on Deafness and Other Communication Disorders (NIDCD); fact sheets and guidelines at <http://www.nidcd.nih.gov/health/>
- National Institute of Dental and Craniofacial Research (NIDCR); guidelines available at <http://www.nidr.nih.gov/health/>
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); guidelines available at <http://www.niddk.nih.gov/health/health.htm>
- National Institute on Drug Abuse (NIDA); guidelines available at <http://www.nida.nih.gov/DrugAbuse.html>
- National Institute of Environmental Health Sciences (NIEHS); environmental health information available at <http://www.niehs.nih.gov/external/facts.htm>
- National Institute of Mental Health (NIMH); guidelines available at <http://www.nimh.nih.gov/practitioners/index.cfm>
- National Institute of Neurological Disorders and Stroke (NINDS); neurological disorder information pages available at [http://www.ninds.nih.gov/health\\_and\\_medical/disorder\\_index.htm](http://www.ninds.nih.gov/health_and_medical/disorder_index.htm)
- National Institute of Nursing Research (NINR); publications on selected illnesses at <http://www.nih.gov/ninr/news-info/publications.html>
- National Institute of Biomedical Imaging and Bioengineering; general information at [http://grants.nih.gov/grants/becon/becon\\_info.htm](http://grants.nih.gov/grants/becon/becon_info.htm)
- Center for Information Technology (CIT); referrals to other agencies based on keyword searches available at [http://kb.nih.gov/www\\_query\\_main.asp](http://kb.nih.gov/www_query_main.asp)
- National Center for Complementary and Alternative Medicine (NCCAM); health information available at <http://nccam.nih.gov/health/>
- National Center for Research Resources (NCRR); various information directories available at <http://www.ncrr.nih.gov/publications.asp>
- Office of Rare Diseases; various fact sheets available at [http://rarediseases.info.nih.gov/html/resources/rep\\_pubs.html](http://rarediseases.info.nih.gov/html/resources/rep_pubs.html)
- Centers for Disease Control and Prevention; various fact sheets on infectious diseases available at <http://www.cdc.gov/publications.htm>

## NIH Databases

In addition to the various Institutes of Health that publish professional guidelines, the NIH has designed a number of databases for professionals.<sup>8</sup> Physician-oriented resources provide a wide variety of information related to the biomedical and health sciences, both past and present. The format of these resources varies. Searchable databases, bibliographic citations, full-text articles (when available), archival collections, and images are all available. The following are referenced by the National Library of Medicine:<sup>9</sup>

- **Bioethics:** Access to published literature on the ethical, legal, and public policy issues surrounding healthcare and biomedical research. This information is provided in conjunction with the Kennedy Institute of Ethics located at Georgetown University, Washington, D.C.: [http://www.nlm.nih.gov/databases/databases\\_bioethics.html](http://www.nlm.nih.gov/databases/databases_bioethics.html)
- **HIV/AIDS Resources:** Describes various links and databases dedicated to HIV/AIDS research: <http://www.nlm.nih.gov/pubs/factsheets/aidsinfs.html>
- **NLM Online Exhibitions:** Describes “Exhibitions in the History of Medicine”: <http://www.nlm.nih.gov/exhibition/exhibition.html>. Additional resources for historical scholarship in medicine: <http://www.nlm.nih.gov/hmd/hmd.html>
- **Biotechnology Information:** Access to public databases. The National Center for Biotechnology Information conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information for the better understanding of molecular processes affecting human health and disease: <http://www.ncbi.nlm.nih.gov/>
- **Population Information:** The National Library of Medicine provides access to worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy: [http://www.nlm.nih.gov/databases/databases\\_population.html](http://www.nlm.nih.gov/databases/databases_population.html)
- **Cancer Information:** Access to cancer-oriented databases: [http://www.nlm.nih.gov/databases/databases\\_cancer.html](http://www.nlm.nih.gov/databases/databases_cancer.html)
- **Profiles in Science:** Offering the archival collections of prominent twentieth-century biomedical scientists to the public through modern digital technology: <http://www.profiles.nlm.nih.gov/>
- **Chemical Information:** Provides links to various chemical databases and references: <http://sis.nlm.nih.gov/Chem/ChemMain.html>
- **Clinical Alerts:** Reports the release of findings from the NIH-funded clinical trials where such release could significantly affect morbidity and mortality: [http://www.nlm.nih.gov/databases/alerts/clinical\\_alerts.html](http://www.nlm.nih.gov/databases/alerts/clinical_alerts.html)
- **Space Life Sciences:** Provides links and information to space-based research (including NASA): [http://www.nlm.nih.gov/databases/databases\\_space.html](http://www.nlm.nih.gov/databases/databases_space.html)
- **MEDLINE:** Bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system, and the pre-clinical sciences: [http://www.nlm.nih.gov/databases/databases\\_medline.html](http://www.nlm.nih.gov/databases/databases_medline.html)

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<sup>8</sup> Remember, for the general public, the National Library of Medicine recommends the databases referenced in MEDLINEplus (<http://medlineplus.gov/> or <http://www.nlm.nih.gov/medlineplus/databases.html>).

<sup>9</sup> See <http://www.nlm.nih.gov/databases/databases.html>.

- **Toxicology and Environmental Health Information (TOXNET):** Databases covering toxicology and environmental health: <http://sis.nlm.nih.gov/Tox/ToxMain.html>
- **Visible Human Interface:** Anatomically detailed, three-dimensional representations of normal male and female human bodies:  
[http://www.nlm.nih.gov/research/visible/visible\\_human.html](http://www.nlm.nih.gov/research/visible/visible_human.html)

### The NLM Gateway<sup>10</sup>

The NLM (National Library of Medicine) Gateway is a Web-based system that lets users search simultaneously in multiple retrieval systems at the U.S. National Library of Medicine (NLM). It allows users of NLM services to initiate searches from one Web interface, providing one-stop searching for many of NLM's information resources or databases.<sup>11</sup> To use the NLM Gateway, simply go to the search site at <http://gateway.nlm.nih.gov/gw/Cmd>. Type "tennis elbow" (or synonyms) into the search box and click "Search." The results will be presented in a tabular form, indicating the number of references in each database category.

### Results Summary

Category	Items Found
Journal Articles	788
Books / Periodicals / Audio Visual	7
Consumer Health	894
Meeting Abstracts	3
Other Collections	0
Total	1692

### HSTAT<sup>12</sup>

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.<sup>13</sup> These documents include clinical practice guidelines, quick-reference guides for clinicians, consumer health brochures, evidence reports and technology assessments from the Agency for Healthcare Research and Quality (AHRQ), as well as AHRQ's Put Prevention Into Practice.<sup>14</sup> Simply search by "tennis elbow" (or synonyms) at the following Web site: <http://text.nlm.nih.gov>.

<sup>10</sup> Adapted from NLM: <http://gateway.nlm.nih.gov/gw/Cmd?Overview.x>.

<sup>11</sup> The NLM Gateway is currently being developed by the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) of the National Institutes of Health (NIH).

<sup>12</sup> Adapted from HSTAT: <http://www.nlm.nih.gov/pubs/factsheets/hstat.html>.

<sup>13</sup> The HSTAT URL is <http://hstat.nlm.nih.gov/>.

<sup>14</sup> Other important documents in HSTAT include: the National Institutes of Health (NIH) Consensus Conference Reports and Technology Assessment Reports; the HIV/AIDS Treatment Information Service (ATIS) resource documents; the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (SAMHSA/CSAT) Treatment Improvement Protocols (TIP) and Center for Substance Abuse Prevention (SAMHSA/CSAP) Prevention Enhancement Protocols System (PEPS); the Public Health Service (PHS) Preventive Services Task Force's *Guide to Clinical Preventive Services*; the independent, nonfederal Task Force on Community Services' *Guide to Community Preventive Services*; and the Health Technology Advisory Committee (HTAC) of the Minnesota Health Care Commission (MHCC) health technology evaluations.

### Coffee Break: Tutorials for Biologists<sup>15</sup>

Coffee Break is a general healthcare site that takes a scientific view of the news and covers recent breakthroughs in biology that may one day assist physicians in developing treatments. Here you will find a collection of short reports on recent biological discoveries. Each report incorporates interactive tutorials that demonstrate how bioinformatics tools are used as a part of the research process. Currently, all Coffee Breaks are written by NCBI staff.<sup>16</sup> Each report is about 400 words and is usually based on a discovery reported in one or more articles from recently published, peer-reviewed literature.<sup>17</sup> This site has new articles every few weeks, so it can be considered an online magazine of sorts. It is intended for general background information. You can access the Coffee Break Web site at the following hyperlink: <http://www.ncbi.nlm.nih.gov/Coffeekbreak/>.

### Other Commercial Databases

In addition to resources maintained by official agencies, other databases exist that are commercial ventures addressing medical professionals. Here are some examples that may interest you:

- **CliniWeb International:** Index and table of contents to selected clinical information on the Internet; see <http://www.ohsu.edu/clinweb/>.
- **Medical World Search:** Searches full text from thousands of selected medical sites on the Internet; see <http://www.mwsearch.com/>.

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<sup>15</sup> Adapted from <http://www.ncbi.nlm.nih.gov/Coffeekbreak/Archive/FAQ.html>.

<sup>16</sup> The figure that accompanies each article is frequently supplied by an expert external to NCBI, in which case the source of the figure is cited. The result is an interactive tutorial that tells a biological story.

<sup>17</sup> After a brief introduction that sets the work described into a broader context, the report focuses on how a molecular understanding can provide explanations of observed biology and lead to therapies for diseases. Each vignette is accompanied by a figure and hypertext links that lead to a series of pages that interactively show how NCBI tools and resources are used in the research process.



## APPENDIX B. PATIENT RESOURCES

### Overview

Official agencies, as well as federally funded institutions supported by national grants, frequently publish a variety of guidelines written with the patient in mind. These are typically called “Fact Sheets” or “Guidelines.” They can take the form of a brochure, information kit, pamphlet, or flyer. Often they are only a few pages in length. Since new guidelines on tennis elbow can appear at any moment and be published by a number of sources, the best approach to finding guidelines is to systematically scan the Internet-based services that post them.

### Patient Guideline Sources

The remainder of this chapter directs you to sources which either publish or can help you find additional guidelines on topics related to tennis elbow. Due to space limitations, these sources are listed in a concise manner. Do not hesitate to consult the following sources by either using the Internet hyperlink provided, or, in cases where the contact information is provided, contacting the publisher or author directly.

#### **The National Institutes of Health**

The NIH gateway to patients is located at <http://health.nih.gov/>. From this site, you can search across various sources and institutes, a number of which are summarized below.

#### **Topic Pages: MEDLINEplus**

The National Library of Medicine has created a vast and patient-oriented healthcare information portal called MEDLINEplus. Within this Internet-based system are “health topic pages” which list links to available materials relevant to tennis elbow. To access this system, log on to <http://www.nlm.nih.gov/medlineplus/healthtopics.html>. From there you can either search using the alphabetical index or browse by broad topic areas. Recently, MEDLINEplus listed the following when searched for “tennis elbow”:

- Guides on tennis elbow

**Tennis Elbow**

<http://www.nlm.nih.gov/medlineplus/tutorials/tenniselbowloader.html>

- Other guides

**Elbow Injuries and Disorders**

<http://www.nlm.nih.gov/medlineplus/elbowinjuriesanddisorders.html>

**Ergonomics**

<http://www.nlm.nih.gov/medlineplus/ergonomics.html>

**Hand Injuries and Disorders**

<http://www.nlm.nih.gov/medlineplus/handinjuriesanddisorders.html>

**Sports Injuries**

<http://www.nlm.nih.gov/medlineplus/sportsinjuries.html>

**Tendinitis**

<http://www.nlm.nih.gov/medlineplus/tendinitis.html>

Within the health topic page dedicated to tennis elbow, the following was listed:

- Diagnosis/Symptoms

**Bone Radiography**

Source: American College of Radiology, Radiological Society of North America

[http://www.radiologyinfo.org/content/bone\\_radiography.htm](http://www.radiologyinfo.org/content/bone_radiography.htm)

**Bone Scan**

Source: National Institutes of Health, Clinical Center

[http://www.cc.nih.gov/cc/patient\\_education/procdiag/bonescan.pdf](http://www.cc.nih.gov/cc/patient_education/procdiag/bonescan.pdf)

**Hand/Wrist/Arm Problems: Self-Care Flowcharts**

Source: American Academy of Family Physicians

<http://familydoctor.org/526.xml>

**MR Imaging (MRI)-Musculoskeletal**

Source: American College of Radiology, Radiological Society of North America

[http://www.radiologyinfo.org/content/mr\\_musculoskeletal.htm](http://www.radiologyinfo.org/content/mr_musculoskeletal.htm)

- Treatment

**Arthroscopy: A Boon For Damaged Joints**

Source: Mayo Foundation for Medical Education and Research

<http://www.mayoclinic.com/invoke.cfm?id=AR00003>

**Elbow Surgery for Arthritis**

Source: Mayo Foundation for Medical Education and Research

<http://www.mayoclinic.com/invoke.cfm?id=AR00008>



- Specific Conditions/Aspects

- **Arthritis of the Elbow**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=239&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=239&topcategory=Arm)

- **Dislocated Elbow**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=174&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=174&topcategory=Arm)

- **Elbow Bursitis**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=166&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=166&topcategory=Arm)

- **Golfer's Elbow**

- Source: Mayo Foundation for Medical Education and Research

- <http://www.mayoclinic.com/invoke.cfm?id=AN00309>

- **Olecranon (Elbow) Fractures**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=246&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=246&topcategory=Arm)

- **Osteochondritis Dissecans (OCD)**

- Source: American Academy of Family Physicians

- <http://familydoctor.org/488.xml>

- **Overuse Injuries**

- Source: American Orthopaedic Society for Sports Medicine

- <http://www.sportsmed.org/Publications/Stips/Overuse.htm>

- **Radial Head Fractures**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=227&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=227&topcategory=Arm)

- **Tennis Elbow**

- <http://www.nlm.nih.gov/medlineplus/tutorials/tenniselbowloader.html>

- **Tennis Elbow**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=132&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=132&topcategory=Arm)

- **Ulnar Nerve Entrapment**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=143&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=143&topcategory=Arm)

- Children

- **Elbow Fractures in Children**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=250&topcategory=Pediatrics](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=250&topcategory=Pediatrics)

- **Throwing Injuries in the Elbow**

- Source: American Academy of Orthopaedic Surgeons

- [http://orthoinfo.aaos.org/fact/thr\\_report.cfm?Thread\\_ID=123&topcategory=Arm](http://orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=123&topcategory=Arm)

- **What's a Funny Bone?**

- Source: Nemours Foundation

- [http://kidshealth.org/kid/talk/qa/funny\\_bone.html](http://kidshealth.org/kid/talk/qa/funny_bone.html)

**Wrong Pitching Mechanics Can Force Little Leaguers to Throw Away More Than a Game**

Source: American Physical Therapy Association

[http://www.apta.org/news/feature\\_releases/feature\\_archives/littleLeagueElbow](http://www.apta.org/news/feature_releases/feature_archives/littleLeagueElbow)

- Organizations

**American Academy of Orthopaedic Surgeons**

<http://www.aaos.org/>

**American Society for Surgery of the Hand**

<http://www.hand-surg.org/>

**National Institute of Arthritis and Musculoskeletal and Skin Diseases**

<http://www.niams.nih.gov/>

- Prevention/Screening

**Taking Care of Your Hand, Wrist, and Elbow**

Source: American Physical Therapy Association

<http://www.apta.org/Consumer/ptandyourbody/hand>

You may also choose to use the search utility provided by MEDLINEplus at the following Web address: <http://www.nlm.nih.gov/medlineplus/>. Simply type a keyword into the search box and click "Search." This utility is similar to the NIH search utility, with the exception that it only includes materials that are linked within the MEDLINEplus system (mostly patient-oriented information). It also has the disadvantage of generating unstructured results. We recommend, therefore, that you use this method only if you have a very targeted search.

### **The Combined Health Information Database (CHID)**

CHID Online is a reference tool that maintains a database directory of thousands of journal articles and patient education guidelines on tennis elbow. CHID offers summaries that describe the guidelines available, including contact information and pricing. CHID's general Web site is <http://chid.nih.gov/>. To search this database, go to <http://chid.nih.gov/detail/detail.html>. In particular, you can use the advanced search options to look up pamphlets, reports, brochures, and information kits. The following was recently posted in this archive:

- **Tennis Elbow**

Source: San Bruno, CA: StayWell Company. 1998. 6 p.

Contact: Available from StayWell Company. 1100 Grundy Lane, San Bruno, CA 94066-3030. (800) 333-3032. Website: [www.staywell.com](http://www.staywell.com). PRICE: Call or write for current pricing on single and bulk orders.

Summary: This illustrated brochure provides people who have tennis elbow, or lateral epicondylitis, with information on the causes, symptoms, diagnosis, and treatment of this inflammation around the bony knob on the outer side of the elbow. Playing a racket sport or doing anything that involves extending the wrist or rotating the forearm can cause tennis elbow. The most common symptom is pain on the outer side of the elbow and down the forearm. Diagnosis is based on a medical history and a physical examination. An x ray can be used to rule out diseases or fractures. Treatments can be

nonsurgical or surgical. Nonsurgical options include resting the wrist, taking an oral antiinflammatory medication, wearing a splint, doing stretching and strengthening exercises, or having an antiinflammatory drug injection. Surgery can be used to repair the inflamed tendon. Flareups can be prevented by changing the way certain activities are performed. 2 figures.

### **Healthfinder™**

Healthfinder™ is sponsored by the U.S. Department of Health and Human Services and offers links to hundreds of other sites that contain healthcare information. This Web site is located at <http://www.healthfinder.gov>. Again, keyword searches can be used to find guidelines. The following was recently found in this database:

- **Patient Guide to Tennis Elbow (Lateral Epicondylitis)**

Summary: Tennis elbow is a condition in which there is inflammation of the tendons (tendinitis) attached to the outside, or lateral side, of the elbow at a bony prominence of the arm bone (humerus).

Source: Educational Institution--Follow the Resource URL for More Information

<http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=6880>

### **The NIH Search Utility**

The NIH search utility allows you to search for documents on over 100 selected Web sites that comprise the NIH-WEB-SPACE. Each of these servers is "crawled" and indexed on an ongoing basis. Your search will produce a list of various documents, all of which will relate in some way to tennis elbow. The drawbacks of this approach are that the information is not organized by theme and that the references are often a mix of information for professionals and patients. Nevertheless, a large number of the listed Web sites provide useful background information. We can only recommend this route, therefore, for relatively rare or specific disorders, or when using highly targeted searches. To use the NIH search utility, visit the following Web page: <http://search.nih.gov/index.html>.

### **Additional Web Sources**

A number of Web sites are available to the public that often link to government sites. These can also point you in the direction of essential information. The following is a representative sample:

- AOL: <http://search.aol.com/cat.adp?id=168&layer=&from=subcats>
- Family Village: <http://www.familyvillage.wisc.edu/specific.htm>
- Google: [http://directory.google.com/Top/Health/Conditions\\_and\\_Diseases/](http://directory.google.com/Top/Health/Conditions_and_Diseases/)
- Med Help International: <http://www.medhelp.org/HealthTopics/A.html>
- Open Directory Project: [http://dmoz.org/Health/Conditions\\_and\\_Diseases/](http://dmoz.org/Health/Conditions_and_Diseases/)
- Yahoo.com: [http://dir.yahoo.com/Health/Diseases\\_and\\_Conditions/](http://dir.yahoo.com/Health/Diseases_and_Conditions/)
- WebMD®Health: [http://my.webmd.com/health\\_topics](http://my.webmd.com/health_topics)

## Finding Associations

There are several Internet directories that provide lists of medical associations with information on or resources relating to tennis elbow. By consulting all of associations listed in this chapter, you will have nearly exhausted all sources for patient associations concerned with tennis elbow.

### The National Health Information Center (NHIC)

The National Health Information Center (NHIC) offers a free referral service to help people find organizations that provide information about tennis elbow. For more information, see the NHIC's Web site at <http://www.health.gov/NHIC/> or contact an information specialist by calling 1-800-336-4797.

### Directory of Health Organizations

The Directory of Health Organizations, provided by the National Library of Medicine Specialized Information Services, is a comprehensive source of information on associations. The Directory of Health Organizations database can be accessed via the Internet at <http://www.sis.nlm.nih.gov/Dir/DirMain.html>. It is composed of two parts: DIRLINE and Health Hotlines.

The DIRLINE database comprises some 10,000 records of organizations, research centers, and government institutes and associations that primarily focus on health and biomedicine. To access DIRLINE directly, go to the following Web site: <http://dirline.nlm.nih.gov/>. Simply type in "tennis elbow" (or a synonym), and you will receive information on all relevant organizations listed in the database.

Health Hotlines directs you to toll-free numbers to over 300 organizations. You can access this database directly at <http://www.sis.nlm.nih.gov/hotlines/>. On this page, you are given the option to search by keyword or by browsing the subject list. When you have received your search results, click on the name of the organization for its description and contact information.

### The Combined Health Information Database

Another comprehensive source of information on healthcare associations is the Combined Health Information Database. Using the "Detailed Search" option, you will need to limit your search to "Organizations" and "tennis elbow". Type the following hyperlink into your Web browser: <http://chid.nih.gov/detail/detail.html>. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For publication date, select "All Years." Then, select your preferred language and the format option "Organization Resource Sheet." Type "tennis elbow" (or synonyms) into the "For these words:" box. You should check back periodically with this database since it is updated every three months.

**The National Organization for Rare Disorders, Inc.**

The National Organization for Rare Disorders, Inc. has prepared a Web site that provides, at no charge, lists of associations organized by health topic. You can access this database at the following Web site: <http://www.rarediseases.org/search/orgsearch.html>. Type “tennis elbow” (or a synonym) into the search box, and click “Submit Query.”



## APPENDIX C. FINDING MEDICAL LIBRARIES

### Overview

In this Appendix, we show you how to quickly find a medical library in your area.

### Preparation

Your local public library and medical libraries have interlibrary loan programs with the National Library of Medicine (NLM), one of the largest medical collections in the world. According to the NLM, most of the literature in the general and historical collections of the National Library of Medicine is available on interlibrary loan to any library. If you would like to access NLM medical literature, then visit a library in your area that can request the publications for you.<sup>18</sup>

### Finding a Local Medical Library

The quickest method to locate medical libraries is to use the Internet-based directory published by the National Network of Libraries of Medicine (NN/LM). This network includes 4626 members and affiliates that provide many services to librarians, health professionals, and the public. To find a library in your area, simply visit <http://nnlm.gov/members/adv.html> or call 1-800-338-7657.

### Medical Libraries in the U.S. and Canada

In addition to the NN/LM, the National Library of Medicine (NLM) lists a number of libraries with reference facilities that are open to the public. The following is the NLM's list and includes hyperlinks to each library's Web site. These Web pages can provide information on hours of operation and other restrictions. The list below is a small sample of

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<sup>18</sup> Adapted from the NLM: <http://www.nlm.nih.gov/psd/cas/interlibrary.html>.

libraries recommended by the National Library of Medicine (sorted alphabetically by name of the U.S. state or Canadian province where the library is located)<sup>19</sup>:

- **Alabama:** Health InfoNet of Jefferson County (Jefferson County Library Cooperative, Lister Hill Library of the Health Sciences), <http://www.uab.edu/infonet/>
- **Alabama:** Richard M. Scrushy Library (American Sports Medicine Institute)
- **Arizona:** Samaritan Regional Medical Center: The Learning Center (Samaritan Health System, Phoenix, Arizona), <http://www.samaritan.edu/library/bannerlibs.htm>
- **California:** Kris Kelly Health Information Center (St. Joseph Health System, Humboldt), <http://www.humboldt1.com/~kkhic/index.html>
- **California:** Community Health Library of Los Gatos, <http://www.healthlib.org/orgresources.html>
- **California:** Consumer Health Program and Services (CHIPS) (County of Los Angeles Public Library, Los Angeles County Harbor-UCLA Medical Center Library) - Carson, CA, <http://www.colapublib.org/services/chips.html>
- **California:** Gateway Health Library (Sutter Gould Medical Foundation)
- **California:** Health Library (Stanford University Medical Center), <http://www-med.stanford.edu/healthlibrary/>
- **California:** Patient Education Resource Center - Health Information and Resources (University of California, San Francisco), <http://sfghdean.ucsf.edu/barnett/PERC/default.asp>
- **California:** Redwood Health Library (Petaluma Health Care District), <http://www.phcd.org/rdwdlib.html>
- **California:** Los Gatos PlaneTree Health Library, <http://planetreesanjose.org/>
- **California:** Sutter Resource Library (Sutter Hospitals Foundation, Sacramento), <http://suttermedicalcenter.org/library/>
- **California:** Health Sciences Libraries (University of California, Davis), <http://www.lib.ucdavis.edu/healthsci/>
- **California:** ValleyCare Health Library & Ryan Comer Cancer Resource Center (ValleyCare Health System, Pleasanton), <http://gaelnet.stmarys-ca.edu/other.libs/gbal/east/vchl.html>
- **California:** Washington Community Health Resource Library (Fremont), <http://www.healthlibrary.org/>
- **Colorado:** William V. Gervasini Memorial Library (Exempla Healthcare), <http://www.saintjosephdenver.org/yourhealth/libraries/>
- **Connecticut:** Hartford Hospital Health Science Libraries (Hartford Hospital), <http://www.harthosp.org/library/>
- **Connecticut:** Healthnet: Connecticut Consumer Health Information Center (University of Connecticut Health Center, Lyman Maynard Stowe Library), <http://library.uchc.edu/departm/hnet/>

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<sup>19</sup> Abstracted from <http://www.nlm.nih.gov/medlineplus/libraries.html>.



- **Connecticut:** Waterbury Hospital Health Center Library (Waterbury Hospital, Waterbury), <http://www.waterburyhospital.com/library/consumer.shtml>
- **Delaware:** Consumer Health Library (Christiana Care Health System, Eugene du Pont Preventive Medicine & Rehabilitation Institute, Wilmington), [http://www.christianacare.org/health\\_guide/health\\_guide\\_pmri\\_health\\_info.cfm](http://www.christianacare.org/health_guide/health_guide_pmri_health_info.cfm)
- **Delaware:** Lewis B. Flinn Library (Delaware Academy of Medicine, Wilmington), <http://www.delamed.org/chls.html>
- **Georgia:** Family Resource Library (Medical College of Georgia, Augusta), [http://cmc.mcg.edu/kids\\_families/fam\\_resources/fam\\_res\\_lib/frl.htm](http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm)
- **Georgia:** Health Resource Center (Medical Center of Central Georgia, Macon), <http://www.mccg.org/hrc/hrchome.asp>
- **Hawaii:** Hawaii Medical Library: Consumer Health Information Service (Hawaii Medical Library, Honolulu), <http://hml.org/CHIS/>
- **Idaho:** DeArmond Consumer Health Library (Kootenai Medical Center, Coeur d'Alene), <http://www.nicon.org/DeArmond/index.htm>
- **Illinois:** Health Learning Center of Northwestern Memorial Hospital (Chicago), [http://www.nmh.org/health\\_info/hlc.html](http://www.nmh.org/health_info/hlc.html)
- **Illinois:** Medical Library (OSF Saint Francis Medical Center, Peoria), <http://www.osfsaintfrancis.org/general/library/>
- **Kentucky:** Medical Library - Services for Patients, Families, Students & the Public (Central Baptist Hospital, Lexington), <http://www.centralbap.com/education/community/library.cfm>
- **Kentucky:** University of Kentucky - Health Information Library (Chandler Medical Center, Lexington), <http://www.mc.uky.edu/PatientEd/>
- **Louisiana:** Alton Ochsner Medical Foundation Library (Alton Ochsner Medical Foundation, New Orleans), <http://www.ochsner.org/library/>
- **Louisiana:** Louisiana State University Health Sciences Center Medical Library-Shreveport, <http://lib-sh.lsuhscc.edu/>
- **Maine:** Franklin Memorial Hospital Medical Library (Franklin Memorial Hospital, Farmington), <http://www.fchn.org/fmh/lib.htm>
- **Maine:** Gerrish-True Health Sciences Library (Central Maine Medical Center, Lewiston), <http://www.cmmc.org/library/library.html>
- **Maine:** Hadley Parrot Health Science Library (Eastern Maine Healthcare, Bangor), <http://www.emh.org/hll/hpl/guide.htm>
- **Maine:** Maine Medical Center Library (Maine Medical Center, Portland), <http://www.mmc.org/library/>
- **Maine:** Parkview Hospital (Brunswick), <http://www.parkviewhospital.org/>
- **Maine:** Southern Maine Medical Center Health Sciences Library (Southern Maine Medical Center, Biddeford), <http://www.smmc.org/services/service.php3?choice=10>
- **Maine:** Stephens Memorial Hospital's Health Information Library (Western Maine Health, Norway), <http://www.wmhcc.org/Library/>

- **Manitoba, Canada:** Consumer & Patient Health Information Service (University of Manitoba Libraries),  
<http://www.umanitoba.ca/libraries/units/health/reference/chis.html>
- **Manitoba, Canada:** J.W. Crane Memorial Library (Deer Lodge Centre, Winnipeg),  
[http://www.deerlodge.mb.ca/crane\\_library/about.asp](http://www.deerlodge.mb.ca/crane_library/about.asp)
- **Maryland:** Health Information Center at the Wheaton Regional Library (Montgomery County, Dept. of Public Libraries, Wheaton Regional Library),  
<http://www.mont.lib.md.us/healthinfo/hic.asp>
- **Massachusetts:** Baystate Medical Center Library (Baystate Health System),  
<http://www.baystatehealth.com/1024/>
- **Massachusetts:** Boston University Medical Center Alumni Medical Library (Boston University Medical Center), <http://med-libwww.bu.edu/library/lib.html>
- **Massachusetts:** Lowell General Hospital Health Sciences Library (Lowell General Hospital, Lowell), <http://www.lowellgeneral.org/library/HomePageLinks/WWW.htm>
- **Massachusetts:** Paul E. Woodard Health Sciences Library (New England Baptist Hospital, Boston), [http://www.nebh.org/health\\_lib.asp](http://www.nebh.org/health_lib.asp)
- **Massachusetts:** St. Luke's Hospital Health Sciences Library (St. Luke's Hospital, Southcoast Health System, New Bedford), <http://www.southcoast.org/library/>
- **Massachusetts:** Treadwell Library Consumer Health Reference Center (Massachusetts General Hospital), <http://www.mgh.harvard.edu/library/chrcindex.html>
- **Massachusetts:** UMass HealthNet (University of Massachusetts Medical School, Worcester), <http://healthnet.umassmed.edu/>
- **Michigan:** Botsford General Hospital Library - Consumer Health (Botsford General Hospital, Library & Internet Services), <http://www.botsfordlibrary.org/consumer.htm>
- **Michigan:** Helen DeRoy Medical Library (Providence Hospital and Medical Centers), <http://www.providence-hospital.org/library/>
- **Michigan:** Marquette General Hospital - Consumer Health Library (Marquette General Hospital, Health Information Center), <http://www.mgh.org/center.html>
- **Michigan:** Patient Education Resource Center - University of Michigan Cancer Center (University of Michigan Comprehensive Cancer Center, Ann Arbor),  
<http://www.cancer.med.umich.edu/learn/leares.htm>
- **Michigan:** Sladen Library & Center for Health Information Resources - Consumer Health Information (Detroit), <http://www.henryford.com/body.cfm?id=39330>
- **Montana:** Center for Health Information (St. Patrick Hospital and Health Sciences Center, Missoula)
- **National:** Consumer Health Library Directory (Medical Library Association, Consumer and Patient Health Information Section), <http://caphis.mlanet.org/directory/index.html>
- **National:** National Network of Libraries of Medicine (National Library of Medicine) - provides library services for health professionals in the United States who do not have access to a medical library, <http://nnlm.gov/>
- **National:** NN/LM List of Libraries Serving the Public (National Network of Libraries of Medicine), <http://nnlm.gov/members/>

- **Nevada:** Health Science Library, West Charleston Library (Las Vegas-Clark County Library District, Las Vegas), [http://www.lvcld.org/special\\_collections/medical/index.htm](http://www.lvcld.org/special_collections/medical/index.htm)
- **New Hampshire:** Dartmouth Biomedical Libraries (Dartmouth College Library, Hanover), <http://www.dartmouth.edu/~biomed/resources.html#conshealth.html#d/>
- **New Jersey:** Consumer Health Library (Rahway Hospital, Rahway), <http://www.rahwayhospital.com/library.htm>
- **New Jersey:** Dr. Walter Phillips Health Sciences Library (Englewood Hospital and Medical Center, Englewood), <http://www.englewoodhospital.com/links/index.htm>
- **New Jersey:** Meland Foundation (Englewood Hospital and Medical Center, Englewood), <http://www.geocities.com/ResearchTriangle/9360/>
- **New York:** Choices in Health Information (New York Public Library) - NLM Consumer Pilot Project participant, <http://www.nypl.org/branch/health/links.html>
- **New York:** Health Information Center (Upstate Medical University, State University of New York, Syracuse), <http://www.upstate.edu/library/hic/>
- **New York:** Health Sciences Library (Long Island Jewish Medical Center, New Hyde Park), <http://www.lij.edu/library/library.html>
- **New York:** ViaHealth Medical Library (Rochester General Hospital), <http://www.nyam.org/library/>
- **Ohio:** Consumer Health Library (Akron General Medical Center, Medical & Consumer Health Library), <http://www.akrongeneral.org/hwlibrary.htm>
- **Oklahoma:** The Health Information Center at Saint Francis Hospital (Saint Francis Health System, Tulsa), <http://www.sfh-tulsa.com/services/healthinfo.asp>
- **Oregon:** Planetree Health Resource Center (Mid-Columbia Medical Center, The Dalles), <http://www.mcmc.net/phrc/>
- **Pennsylvania:** Community Health Information Library (Milton S. Hershey Medical Center, Hershey), <http://www.hmc.psu.edu/commhealth/>
- **Pennsylvania:** Community Health Resource Library (Geisinger Medical Center, Danville), <http://www.geisinger.edu/education/commlib.shtml>
- **Pennsylvania:** HealthInfo Library (Moses Taylor Hospital, Scranton), <http://www.mth.org/healthwellness.html>
- **Pennsylvania:** Hopwood Library (University of Pittsburgh, Health Sciences Library System, Pittsburgh), [http://www.hsls.pitt.edu/guides/chi/hopwood/index\\_html](http://www.hsls.pitt.edu/guides/chi/hopwood/index_html)
- **Pennsylvania:** Koop Community Health Information Center (College of Physicians of Philadelphia), <http://www.collphyphil.org/kooppg1.shtml>
- **Pennsylvania:** Learning Resources Center - Medical Library (Susquehanna Health System, Williamsport), <http://www.shscares.org/services/lrc/index.asp>
- **Pennsylvania:** Medical Library (UPMC Health System, Pittsburgh), <http://www.upmc.edu/passavant/library.htm>
- **Quebec, Canada:** Medical Library (Montreal General Hospital), <http://www.mghlib.mcgill.ca/>

- **South Dakota:** Rapid City Regional Hospital Medical Library (Rapid City Regional Hospital), <http://www.rcrh.org/Services/Library/Default.asp>
- **Texas:** Houston HealthWays (Houston Academy of Medicine-Texas Medical Center Library), <http://hhw.library.tmc.edu/>
- **Washington:** Community Health Library (Kittitas Valley Community Hospital), <http://www.kvch.com/>
- **Washington:** Southwest Washington Medical Center Library (Southwest Washington Medical Center, Vancouver), <http://www.swmedicalcenter.com/body.cfm?id=72>

## ONLINE GLOSSARIES

The Internet provides access to a number of free-to-use medical dictionaries. The National Library of Medicine has compiled the following list of online dictionaries:

- ADAM Medical Encyclopedia (A.D.A.M., Inc.), comprehensive medical reference:  
<http://www.nlm.nih.gov/medlineplus/encyclopedia.html>
- MedicineNet.com Medical Dictionary (MedicineNet, Inc.):  
<http://www.medterms.com/Script/Main/hp.asp>
- Merriam-Webster Medical Dictionary (Inteli-Health, Inc.):  
<http://www.intelihealth.com/IH/>
- Multilingual Glossary of Technical and Popular Medical Terms in Eight European Languages (European Commission) - Danish, Dutch, English, French, German, Italian, Portuguese, and Spanish: <http://allserv.rug.ac.be/~rvdstich/eugloss/welcome.html>
- On-line Medical Dictionary (CancerWEB): <http://cancerweb.ncl.ac.uk/omd/>
- Rare Diseases Terms (Office of Rare Diseases):  
<http://ord.aspensys.com/asp/diseases/diseases.asp>
- Technology Glossary (National Library of Medicine) - Health Care Technology:  
<http://www.nlm.nih.gov/nichsr/ta101/ta10108.htm>

Beyond these, MEDLINEplus contains a very patient-friendly encyclopedia covering every aspect of medicine (licensed from A.D.A.M., Inc.). The ADAM Medical Encyclopedia can be accessed at <http://www.nlm.nih.gov/medlineplus/encyclopedia.html>. ADAM is also available on commercial Web sites such as drkoop.com (<http://www.drkoop.com/>) and Web MD ([http://my.webmd.com/adam/asset/adam\\_disease\\_articles/a\\_to\\_z/a](http://my.webmd.com/adam/asset/adam_disease_articles/a_to_z/a)).

### Online Dictionary Directories

The following are additional online directories compiled by the National Library of Medicine, including a number of specialized medical dictionaries:

- Medical Dictionaries: Medical & Biological (World Health Organization):  
<http://www.who.int/hlt/virtuallibrary/English/diction.htm#Medical>
- MEL-Michigan Electronic Library List of Online Health and Medical Dictionaries (Michigan Electronic Library): <http://mel.lib.mi.us/health/health-dictionaries.html>
- Patient Education: Glossaries (DMOZ Open Directory Project):  
[http://dmoz.org/Health/Education/Patient\\_Education/Glossaries/](http://dmoz.org/Health/Education/Patient_Education/Glossaries/)
- Web of Online Dictionaries (Bucknell University):  
<http://www.yourdictionary.com/diction5.html#medicine>



## TENNIS ELBOW DICTIONARY

The definitions below are derived from official public sources, including the National Institutes of Health [NIH] and the European Union [EU].

**Abduction:** Forcible pulling of a limb away from its natural position, a risk in road accidents and disasters; move outwards away from middle line. [NIH]

**Acrylonitrile:** A highly poisonous compound used widely in the manufacture of plastics, adhesives and synthetic rubber. [NIH]

**Acupuncture Points:** Designated locations along nerves or organ meridians for inserting acupuncture needles. [NIH]

**Adduction:** The rotation of an eye toward the midline (nasally). [NIH]

**Adrenal Cortex:** The outer layer of the adrenal gland. It secretes mineralocorticoids, androgens, and glucocorticoids. [NIH]

**Adsorption:** The condensation of gases, liquids, or dissolved substances on the surfaces of solids. It includes adsorptive phenomena of bacteria and viruses as well as of tissues treated with exogenous drugs and chemicals. [NIH]

**Adverse Effect:** An unwanted side effect of treatment. [NIH]

**Aggravation:** An increasing in seriousness or severity; an act or circumstance that intensifies, or makes worse. [EU]

**Algorithms:** A procedure consisting of a sequence of algebraic formulas and/or logical steps to calculate or determine a given task. [NIH]

**Alkaloid:** A member of a large group of chemicals that are made by plants and have nitrogen in them. Some alkaloids have been shown to work against cancer. [NIH]

**Alternative medicine:** Practices not generally recognized by the medical community as standard or conventional medical approaches and used instead of standard treatments. Alternative medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

**Ameliorating:** A changeable condition which prevents the consequence of a failure or accident from becoming as bad as it otherwise would. [NIH]

**Analgesic:** An agent that alleviates pain without causing loss of consciousness. [EU]

**Analogous:** Resembling or similar in some respects, as in function or appearance, but not in origin or development;. [EU]

**Anatomical:** Pertaining to anatomy, or to the structure of the organism. [EU]

**Androgens:** A class of sex hormones associated with the development and maintenance of the secondary male sex characteristics, sperm induction, and sexual differentiation. In addition to increasing virility and libido, they also increase nitrogen and water retention and stimulate skeletal growth. [NIH]

**Anions:** Negatively charged atoms, radicals or groups of atoms which travel to the anode or positive pole during electrolysis. [NIH]

**Antiallergic:** Counteracting allergy or allergic conditions. [EU]

**Anti-inflammatory:** Having to do with reducing inflammation. [NIH]

**Anti-Inflammatory Agents:** Substances that reduce or suppress inflammation. [NIH]

**Antineoplastic:** Inhibiting or preventing the development of neoplasms, checking the maturation and proliferation of malignant cells. [EU]

**Antioxidants:** Naturally occurring or synthetic substances that inhibit or retard the oxidation of a substance to which it is added. They counteract the harmful and damaging effects of oxidation in animal tissues. [NIH]

**Anxiety:** Persistent feeling of dread, apprehension, and impending disaster. [NIH]

**Aperture:** A natural hole of perforation, especially one in a bone. [NIH]

**Aqueous:** Having to do with water. [NIH]

**Arteries:** The vessels carrying blood away from the heart. [NIH]

**Arteriolar:** Pertaining to or resembling arterioles. [EU]

**Arthralgia:** Pain in the joint. [NIH]

**Arthritis, Rheumatoid:** A chronic systemic disease, primarily of the joints, marked by inflammatory changes in the synovial membranes and articular structures, widespread fibrinoid degeneration of the collagen fibers in mesenchymal tissues, and by atrophy and rarefaction of bony structures. Etiology is unknown, but autoimmune mechanisms have been implicated. [NIH]

**Articular:** Of or pertaining to a joint. [EU]

**Aspiration:** The act of inhaling. [NIH]

**Aspirin:** A drug that reduces pain, fever, inflammation, and blood clotting. Aspirin belongs to the family of drugs called nonsteroidal anti-inflammatory agents. It is also being studied in cancer prevention. [NIH]

**Atrophy:** Decrease in the size of a cell, tissue, organ, or multiple organs, associated with a variety of pathological conditions such as abnormal cellular changes, ischemia, malnutrition, or hormonal changes. [NIH]

**Attenuated:** Strain with weakened or reduced virulence. [NIH]

**Attenuation:** Reduction of transmitted sound energy or its electrical equivalent. [NIH]

**Base:** In chemistry, the nonacid part of a salt; a substance that combines with acids to form salts; a substance that dissociates to give hydroxide ions in aqueous solutions; a substance whose molecule or ion can combine with a proton (hydrogen ion); a substance capable of donating a pair of electrons (to an acid) for the formation of a coordinate covalent bond. [EU]

**Benign:** Not cancerous; does not invade nearby tissue or spread to other parts of the body. [NIH]

**Bile:** An emulsifying agent produced in the liver and secreted into the duodenum. Its composition includes bile acids and salts, cholesterol, and electrolytes. It aids digestion of fats in the duodenum. [NIH]

**Biochemical:** Relating to biochemistry; characterized by, produced by, or involving chemical reactions in living organisms. [EU]

**Biomechanics:** The study of the application of mechanical laws and the action of forces to living structures. [NIH]

**Biotechnology:** Body of knowledge related to the use of organisms, cells or cell-derived constituents for the purpose of developing products which are technically, scientifically and clinically useful. Alteration of biologic function at the molecular level (i.e., genetic engineering) is a central focus; laboratory methods used include transfection and cloning technologies, sequence and structure analysis algorithms, computer databases, and gene and



protein structure function analysis and prediction. [NIH]

**Bladder:** The organ that stores urine. [NIH]

**Blood Platelets:** Non-nucleated disk-shaped cells formed in the megakaryocyte and found in the blood of all mammals. They are mainly involved in blood coagulation. [NIH]

**Blood vessel:** A tube in the body through which blood circulates. Blood vessels include a network of arteries, arterioles, capillaries, venules, and veins. [NIH]

**Bone scan:** A technique to create images of bones on a computer screen or on film. A small amount of radioactive material is injected into a blood vessel and travels through the bloodstream; it collects in the bones and is detected by a scanner. [NIH]

**Brachial:** All the nerves from the arm are ripped from the spinal cord. [NIH]

**Brachial Plexus:** The large network of nerve fibers which distributes the innervation of the upper extremity. The brachial plexus extends from the neck into the axilla. In humans, the nerves of the plexus usually originate from the lower cervical and the first thoracic spinal cord segments (C5-C8 and T1), but variations are not uncommon. [NIH]

**Bradykinin:** A nonapeptide messenger that is enzymatically produced from kallidin in the blood where it is a potent but short-lived agent of arteriolar dilation and increased capillary permeability. Bradykinin is also released from mast cells during asthma attacks, from gut walls as a gastrointestinal vasodilator, from damaged tissues as a pain signal, and may be a neurotransmitter. [NIH]

**Branch:** Most commonly used for branches of nerves, but applied also to other structures. [NIH]

**Bursitis:** Inflammation of a bursa, occasionally accompanied by a calcific deposit in the underlying supraspinatus tendon; the most common site is the subdeltoid bursa. [EU]

**Calcitonin Gene-Related Peptide:** Calcitonin gene-related peptide. A 37-amino acid peptide derived from the calcitonin gene. It occurs as a result of alternative processing of mRNA from the calcitonin gene. The neuropeptide is widely distributed in neural tissue of the brain, gut, perivascular nerves, and other tissue. The peptide produces multiple biological effects and has both circulatory and neurotransmitter modes of action. In particular, it is a potent endogenous vasodilator. [NIH]

**Capillary:** Any one of the minute vessels that connect the arterioles and venules, forming a network in nearly all parts of the body. Their walls act as semipermeable membranes for the interchange of various substances, including fluids, between the blood and tissue fluid; called also vas capillare. [EU]

**Capillary Permeability:** Property of blood capillary walls that allows for the selective exchange of substances. Small lipid-soluble molecules such as carbon dioxide and oxygen move freely by diffusion. Water and water-soluble molecules cannot pass through the endothelial walls and are dependent on microscopic pores. These pores show narrow areas (tight junctions) which may limit large molecule movement. [NIH]

**Carbohydrate:** An aldehyde or ketone derivative of a polyhydric alcohol, particularly of the pentahydric and hexahydric alcohols. They are so named because the hydrogen and oxygen are usually in the proportion to form water, (CH<sub>2</sub>O)<sub>n</sub>. The most important carbohydrates are the starches, sugars, celluloses, and gums. They are classified into mono-, di-, tri-, poly- and heterosaccharides. [EU]

**Carbon Dioxide:** A colorless, odorless gas that can be formed by the body and is necessary for the respiration cycle of plants and animals. [NIH]

**Carcinogen:** Any substance that causes cancer. [NIH]

**Carcinogenic:** Producing carcinoma. [EU]

**Cardiac:** Having to do with the heart. [NIH]

**Cardiovascular:** Having to do with the heart and blood vessels. [NIH]

**Carpal Tunnel Syndrome:** A median nerve injury inside the carpal tunnel that results in symptoms of pain, numbness, tingling, clumsiness, and a lack of sweating, which can be caused by work with certain hand and wrist postures. [NIH]

**Case report:** A detailed report of the diagnosis, treatment, and follow-up of an individual patient. Case reports also contain some demographic information about the patient (for example, age, gender, ethnic origin). [NIH]

**Cations:** Positively charged atoms, radicals or groups of atoms which travel to the cathode or negative pole during electrolysis. [NIH]

**Caudal:** Denoting a position more toward the cauda, or tail, than some specified point of reference; same as inferior, in human anatomy. [EU]

**Cell:** The individual unit that makes up all of the tissues of the body. All living things are made up of one or more cells. [NIH]

**Central Nervous System:** The main information-processing organs of the nervous system, consisting of the brain, spinal cord, and meninges. [NIH]

**Central Nervous System Infections:** Pathogenic infections of the brain, spinal cord, and meninges. DNA virus infections; RNA virus infections; bacterial infections; mycoplasma infections; Spirochaetales infections; fungal infections; protozoan infections; helminthiasis; and prion diseases may involve the central nervous system as a primary or secondary process. [NIH]

**Cervical:** Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck; cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the "neck") of the uterus. [NIH]

**Cervix:** The lower, narrow end of the uterus that forms a canal between the uterus and vagina. [NIH]

**Character:** In current usage, approximately equivalent to personality. The sum of the relatively fixed personality traits and habitual modes of response of an individual. [NIH]

**Chemotherapy:** Treatment with anticancer drugs. [NIH]

**Chiropractic:** A system of treating bodily disorders by manipulation of the spine and other parts, based on the belief that the cause is the abnormal functioning of a nerve. [NIH]

**Cholesterol:** The principal sterol of all higher animals, distributed in body tissues, especially the brain and spinal cord, and in animal fats and oils. [NIH]

**Chronic:** A disease or condition that persists or progresses over a long period of time. [NIH]

**Clinical trial:** A research study that tests how well new medical treatments or other interventions work in people. Each study is designed to test new methods of screening, prevention, diagnosis, or treatment of a disease. [NIH]

**Cloning:** The production of a number of genetically identical individuals; in genetic engineering, a process for the efficient replication of a great number of identical DNA molecules. [NIH]

**Collagen:** A polypeptide substance comprising about one third of the total protein in mammalian organisms. It is the main constituent of skin, connective tissue, and the organic substance of bones and teeth. Different forms of collagen are produced in the body but all consist of three alpha-polypeptide chains arranged in a triple helix. Collagen is differentiated from other fibrous proteins, such as elastin, by the content of proline, hydroxyproline, and hydroxylysine; by the absence of tryptophan; and particularly by the

high content of polar groups which are responsible for its swelling properties. [NIH]

**Collagen disease:** A term previously used to describe chronic diseases of the connective tissue (e.g., rheumatoid arthritis, systemic lupus erythematosus, and systemic sclerosis), but now is thought to be more appropriate for diseases associated with defects in collagen, which is a component of the connective tissue. [NIH]

**Communis:** Common tendon of the rectus group of muscles that surrounds the optic foramen and a portion of the superior orbital fissure, to the anterior margin of which it is attached at the spina recti lateralis. [NIH]

**Complement:** A term originally used to refer to the heat-labile factor in serum that causes immune cytolysis, the lysis of antibody-coated cells, and now referring to the entire functionally related system comprising at least 20 distinct serum proteins that is the effector not only of immune cytolysis but also of other biologic functions. Complement activation occurs by two different sequences, the classic and alternative pathways. The proteins of the classic pathway are termed 'components of complement' and are designated by the symbols C1 through C9. C1 is a calcium-dependent complex of three distinct proteins C1q, C1r and C1s. The proteins of the alternative pathway (collectively referred to as the properdin system) and complement regulatory proteins are known by semisystematic or trivial names. Fragments resulting from proteolytic cleavage of complement proteins are designated with lower-case letter suffixes, e.g., C3a. Inactivated fragments may be designated with the suffix 'i', e.g. C3bi. Activated components or complexes with biological activity are designated by a bar over the symbol e.g. C1 or C4b,2a. The classic pathway is activated by the binding of C1 to classic pathway activators, primarily antigen-antibody complexes containing IgM, IgG1, IgG3; C1q binds to a single IgM molecule or two adjacent IgG molecules. The alternative pathway can be activated by IgA immune complexes and also by nonimmunologic materials including bacterial endotoxins, microbial polysaccharides, and cell walls. Activation of the classic pathway triggers an enzymatic cascade involving C1, C4, C2 and C3; activation of the alternative pathway triggers a cascade involving C3 and factors B, D and P. Both result in the cleavage of C5 and the formation of the membrane attack complex. Complement activation also results in the formation of many biologically active complement fragments that act as anaphylatoxins, opsonins, or chemotactic factors. [EU]

**Complementary and alternative medicine:** CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices are not considered standard medical approaches. CAM includes dietary supplements, megadose vitamins, herbal preparations, special teas, massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

**Complementary medicine:** Practices not generally recognized by the medical community as standard or conventional medical approaches and used to enhance or complement the standard treatments. Complementary medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

**Compress:** A plug used to occlude an orifice in the control of bleeding, or to mop up secretions; an absorbent pad. [NIH]

**Computational Biology:** A field of biology concerned with the development of techniques for the collection and manipulation of biological data, and the use of such data to make biological discoveries or predictions. This field encompasses all computational methods and theories applicable to molecular biology and areas of computer-based techniques for solving biological problems including manipulation of models and datasets. [NIH]

**Concentric:** Having a common center of curvature or symmetry. [NIH]

**Congestion:** Excessive or abnormal accumulation of blood in a part. [EU]

**Consciousness:** Sense of awareness of self and of the environment. [NIH]

**Contact dermatitis:** Inflammation of the skin with varying degrees of erythema, edema and vesiculation resulting from cutaneous contact with a foreign substance or other exposure. [NIH]

**Contraindications:** Any factor or sign that it is unwise to pursue a certain kind of action or treatment, e. g. giving a general anesthetic to a person with pneumonia. [NIH]

**Coronary:** Encircling in the manner of a crown; a term applied to vessels; nerves, ligaments, etc. The term usually denotes the arteries that supply the heart muscle and, by extension, a pathologic involvement of them. [EU]

**Coronary Thrombosis:** Presence of a thrombus in a coronary artery, often causing a myocardial infarction. [NIH]

**Corticosteroid:** Any of the steroids elaborated by the adrenal cortex (excluding the sex hormones of adrenal origin) in response to the release of corticotrophin (adrenocorticotrophic hormone) by the pituitary gland, to any of the synthetic equivalents of these steroids, or to angiotensin II. They are divided, according to their predominant biological activity, into three major groups: glucocorticoids, chiefly influencing carbohydrate, fat, and protein metabolism; mineralocorticoids, affecting the regulation of electrolyte and water balance; and C19 androgens. Some corticosteroids exhibit both types of activity in varying degrees, and others exert only one type of effect. The corticosteroids are used clinically for hormonal replacement therapy, for suppression of ACTH secretion by the anterior pituitary, as antineoplastic, antiallergic, and anti-inflammatory agents, and to suppress the immune response. Called also adrenocortical hormone and corticoid. [EU]

**Cortisone:** A natural steroid hormone produced in the adrenal gland. It can also be made in the laboratory. Cortisone reduces swelling and can suppress immune responses. [NIH]

**Cranial:** Pertaining to the cranium, or to the anterior (in animals) or superior (in humans) end of the body. [EU]

**Craniocerebral Trauma:** Traumatic injuries involving the cranium and intracranial structures (i.e., brain; cranial nerves; meninges; and other structures). Injuries may be classified by whether or not the skull is penetrated (i.e., penetrating vs. nonpenetrating) or whether there is an associated hemorrhage. [NIH]

**Curative:** Tending to overcome disease and promote recovery. [EU]

**Cutaneous:** Having to do with the skin. [NIH]

**Cystitis:** Inflammation of the urinary bladder. [EU]

**Databases, Bibliographic:** Extensive collections, reputedly complete, of references and citations to books, articles, publications, etc., generally on a single subject or specialized subject area. Databases can operate through automated files, libraries, or computer disks. The concept should be differentiated from factual databases which is used for collections of data and facts apart from bibliographic references to them. [NIH]

**Decompression:** Decompression external to the body, most often the slow lessening of external pressure on the whole body (especially in caisson workers, deep sea divers, and persons who ascend to great heights) to prevent decompression sickness. It includes also sudden accidental decompression, but not surgical (local) decompression or decompression applied through body openings. [NIH]

**Decompression Sickness:** A condition occurring as a result of exposure to a rapid fall in ambient pressure. Gases, nitrogen in particular, come out of solution and form bubbles in body fluid and blood. These gas bubbles accumulate in joint spaces and the peripheral circulation impairing tissue oxygenation causing disorientation, severe pain, and potentially

death. [NIH]

**Degenerative:** Undergoing degeneration : tending to degenerate; having the character of or involving degeneration; causing or tending to cause degeneration. [EU]

**Dendrites:** Extensions of the nerve cell body. They are short and branched and receive stimuli from other neurons. [NIH]

**Dermatitis:** Any inflammation of the skin. [NIH]

**Diagnosis, Differential:** Determination of which one of two or more diseases or conditions a patient is suffering from by systematically comparing and contrasting results of diagnostic measures. [NIH]

**Diagnostic procedure:** A method used to identify a disease. [NIH]

**Diflunisal:** A salicylate derivative and anti-inflammatory analgesic with actions and side effects similar to those of aspirin. [NIH]

**Dilation:** A process by which the pupil is temporarily enlarged with special eye drops (mydriatic); allows the eye care specialist to better view the inside of the eye. [NIH]

**Direct:** 1. Straight; in a straight line. 2. Performed immediately and without the intervention of subsidiary means. [EU]

**Dislocation:** The displacement of any part, more especially of a bone. Called also luxation. [EU]

**Distal:** Remote; farther from any point of reference; opposed to proximal. In dentistry, used to designate a position on the dental arch farther from the median line of the jaw. [EU]

**Dizziness:** An imprecise term which may refer to a sense of spatial disorientation, motion of the environment, or lightheadedness. [NIH]

**Dorsal:** 1. Pertaining to the back or to any dorsum. 2. Denoting a position more toward the back surface than some other object of reference; same as posterior in human anatomy; superior in the anatomy of quadrupeds. [EU]

**Dorsum:** A plate of bone which forms the posterior boundary of the sella turcica. [NIH]

**Drive:** A state of internal activity of an organism that is a necessary condition before a given stimulus will elicit a class of responses; e.g., a certain level of hunger (drive) must be present before food will elicit an eating response. [NIH]

**Drug Interactions:** The action of a drug that may affect the activity, metabolism, or toxicity of another drug. [NIH]

**Edema:** Excessive amount of watery fluid accumulated in the intercellular spaces, most commonly present in subcutaneous tissue. [NIH]

**Efficacy:** The extent to which a specific intervention, procedure, regimen, or service produces a beneficial result under ideal conditions. Ideally, the determination of efficacy is based on the results of a randomized control trial. [NIH]

**Elbow Joint:** A hinge joint connecting the forearm to the arm. [NIH]

**Electrolyte:** A substance that dissociates into ions when fused or in solution, and thus becomes capable of conducting electricity; an ionic solute. [EU]

**Electromyography:** Recording of the changes in electric potential of muscle by means of surface or needle electrodes. [NIH]

**Electrons:** Stable elementary particles having the smallest known negative charge, present in all elements; also called negatrons. Positively charged electrons are called positrons. The numbers, energies and arrangement of electrons around atomic nuclei determine the chemical identities of elements. Beams of electrons are called cathode rays or beta rays, the

latter being a high-energy biproduct of nuclear decay. [NIH]

**Endorphin:** Opioid peptides derived from beta-lipotropin. Endorphin is the most potent naturally occurring analgesic agent. It is present in pituitary, brain, and peripheral tissues. [NIH]

**Enkephalin:** A natural opiate painkiller, in the hypothalamus. [NIH]

**Environmental Health:** The science of controlling or modifying those conditions, influences, or forces surrounding man which relate to promoting, establishing, and maintaining health. [NIH]

**Enzyme:** A protein that speeds up chemical reactions in the body. [NIH]

**Epicondylitis:** Inflammation of the epicondyle or of the tissues adjoining the epicondyle of the humerus. [EU]

**Epidemiological:** Relating to, or involving epidemiology. [EU]

**Ergonomics:** Study of the relationships between man and machines; adjusting the design of machines to the need and capacities of man; study of the effect of machines on man's behavior. [NIH]

**Erythema:** Redness of the skin produced by congestion of the capillaries. This condition may result from a variety of causes. [NIH]

**Extensor:** A muscle whose contraction tends to straighten a limb; the antagonist of a flexor. [NIH]

**Extracellular:** Outside a cell or cells. [EU]

**Extracellular Space:** Interstitial space between cells, occupied by fluid as well as amorphous and fibrous substances. [NIH]

**Extracorporeal:** Situated or occurring outside the body. [EU]

**Extremity:** A limb; an arm or leg (membrum); sometimes applied specifically to a hand or foot. [EU]

**Family Planning:** Programs or services designed to assist the family in controlling reproduction by either improving or diminishing fertility. [NIH]

**Fat:** Total lipids including phospholipids. [NIH]

**Fissure:** Any cleft or groove, normal or otherwise; especially a deep fold in the cerebral cortex which involves the entire thickness of the brain wall. [EU]

**Flank Pain:** Pain emanating from below the ribs and above the ilium. [NIH]

**Flexion:** In gynaecology, a displacement of the uterus in which the organ is bent so far forward or backward that an acute angle forms between the fundus and the cervix. [EU]

**Flexor:** Muscles which flex a joint. [NIH]

**Foramen:** A natural hole of perforation, especially one in a bone. [NIH]

**Forearm:** The part between the elbow and the wrist. [NIH]

**Fossa:** A cavity, depression, or pit. [NIH]

**Friction:** Surface resistance to the relative motion of one body against the rubbing, sliding, rolling, or flowing of another with which it is in contact. [NIH]

**Fundus:** The larger part of a hollow organ that is farthest away from the organ's opening. The bladder, gallbladder, stomach, uterus, eye, and cavity of the middle ear all have a fundus. [NIH]

**Ganglia:** Clusters of multipolar neurons surrounded by a capsule of loosely organized connective tissue located outside the central nervous system. [NIH]

**Gas:** Air that comes from normal breakdown of food. The gases are passed out of the body through the rectum (flatulence) or the mouth (burp). [NIH]

**Gas exchange:** Primary function of the lungs; transfer of oxygen from inhaled air into the blood and of carbon dioxide from the blood into the lungs. [NIH]

**Gastritis:** Inflammation of the stomach. [EU]

**Gastrointestinal:** Refers to the stomach and intestines. [NIH]

**Gastrointestinal tract:** The stomach and intestines. [NIH]

**Gene:** The functional and physical unit of heredity passed from parent to offspring. Genes are pieces of DNA, and most genes contain the information for making a specific protein. [NIH]

**Gland:** An organ that produces and releases one or more substances for use in the body. Some glands produce fluids that affect tissues or organs. Others produce hormones or participate in blood production. [NIH]

**Glucocorticoid:** A compound that belongs to the family of compounds called corticosteroids (steroids). Glucocorticoids affect metabolism and have anti-inflammatory and immunosuppressive effects. They may be naturally produced (hormones) or synthetic (drugs). [NIH]

**Glutamate:** Excitatory neurotransmitter of the brain. [NIH]

**Gonadal:** Pertaining to a gonad. [EU]

**Governing Board:** The group in which legal authority is vested for the control of health-related institutions and organizations. [NIH]

**Granuloma:** A relatively small nodular inflammatory lesion containing grouped mononuclear phagocytes, caused by infectious and noninfectious agents. [NIH]

**Groin:** The external junctional region between the lower part of the abdomen and the thigh. [NIH]

**Headache:** Pain in the cranial region that may occur as an isolated and benign symptom or as a manifestation of a wide variety of conditions including subarachnoid hemorrhage; craniocerebral trauma; central nervous system infections; intracranial hypertension; and other disorders. In general, recurrent headaches that are not associated with a primary disease process are referred to as headache disorders (e.g., migraine). [NIH]

**Headache Disorders:** Common conditions characterized by persistent or recurrent headaches. Headache syndrome classification systems may be based on etiology (e.g., vascular headache, post-traumatic headaches, etc.), temporal pattern (e.g., cluster headache, paroxysmal hemicrania, etc.), and precipitating factors (e.g., cough headache). [NIH]

**Hemorrhage:** Bleeding or escape of blood from a vessel. [NIH]

**Hemostasis:** The process which spontaneously arrests the flow of blood from vessels carrying blood under pressure. It is accomplished by contraction of the vessels, adhesion and aggregation of formed blood elements, and the process of blood or plasma coagulation. [NIH]

**Hormonal:** Pertaining to or of the nature of a hormone. [EU]

**Hormone:** A substance in the body that regulates certain organs. Hormones such as gastrin help in breaking down food. Some hormones come from cells in the stomach and small intestine. [NIH]

**Humeral:** 1. Of, relating to, or situated in the region of the humerus: brachial. 2. Of or belonging to the shoulder. 3. Of, relating to, or being any of several body parts that are analogous in structure, function, or location to the humerus or shoulder. [EU]

**Hydrocortisone:** The main glucocorticoid secreted by the adrenal cortex. Its synthetic counterpart is used, either as an injection or topically, in the treatment of inflammation, allergy, collagen diseases, asthma, adrenocortical deficiency, shock, and some neoplastic conditions. [NIH]

**Hydrogen:** The first chemical element in the periodic table. It has the atomic symbol H, atomic number 1, and atomic weight 1. It exists, under normal conditions, as a colorless, odorless, tasteless, diatomic gas. Hydrogen ions are protons. Besides the common H1 isotope, hydrogen exists as the stable isotope deuterium and the unstable, radioactive isotope tritium. [NIH]

**Hydrolysis:** The process of cleaving a chemical compound by the addition of a molecule of water. [NIH]

**Hyperplasia:** An increase in the number of cells in a tissue or organ, not due to tumor formation. It differs from hypertrophy, which is an increase in bulk without an increase in the number of cells. [NIH]

**Hypersensitivity:** Altered reactivity to an antigen, which can result in pathologic reactions upon subsequent exposure to that particular antigen. [NIH]

**Hypertension:** Persistently high arterial blood pressure. Currently accepted threshold levels are 140 mm Hg systolic and 90 mm Hg diastolic pressure. [NIH]

**Hypertrophy:** General increase in bulk of a part or organ, not due to tumor formation, nor to an increase in the number of cells. [NIH]

**Hypothalamus:** Ventral part of the diencephalon extending from the region of the optic chiasm to the caudal border of the mammillary bodies and forming the inferior and lateral walls of the third ventricle. [NIH]

**Id:** The part of the personality structure which harbors the unconscious instinctive desires and strivings of the individual. [NIH]

**Idiopathic:** Describes a disease of unknown cause. [NIH]

**Immune response:** The activity of the immune system against foreign substances (antigens). [NIH]

**In vivo:** In the body. The opposite of in vitro (outside the body or in the laboratory). [NIH]

**Incision:** A cut made in the body during surgery. [NIH]

**Indicative:** That indicates; that points out more or less exactly; that reveals fairly clearly. [EU]

**Inertia:** Inactivity, inability to move spontaneously. [EU]

**Infarction:** A pathological process consisting of a sudden insufficient blood supply to an area, which results in necrosis of that area. It is usually caused by a thrombus, an embolus, or a vascular torsion. [NIH]

**Infection:** 1. Invasion and multiplication of microorganisms in body tissues, which may be clinically unapparent or result in local cellular injury due to competitive metabolism, toxins, intracellular replication, or antigen-antibody response. The infection may remain localized, subclinical, and temporary if the body's defensive mechanisms are effective. A local infection may persist and spread by extension to become an acute, subacute, or chronic clinical infection or disease state. A local infection may also become systemic when the microorganisms gain access to the lymphatic or vascular system. 2. An infectious disease. [EU]

**Inflammation:** A pathological process characterized by injury or destruction of tissues caused by a variety of cytologic and chemical reactions. It is usually manifested by typical signs of pain, heat, redness, swelling, and loss of function. [NIH]



**Innervation:** 1. The distribution or supply of nerves to a part. 2. The supply of nervous energy or of nerve stimulus sent to a part. [EU]

**Intervertebral:** Situated between two contiguous vertebrae. [EU]

**Intervertebral Disk Displacement:** An intervertebral disk in which the nucleus pulposus has protruded through surrounding fibrocartilage. This occurs most frequently in the lower lumbar region. [NIH]

**Intracellular:** Inside a cell. [NIH]

**Intramuscular:** IM. Within or into muscle. [NIH]

**Invasive:** 1. Having the quality of invasiveness. 2. Involving puncture or incision of the skin or insertion of an instrument or foreign material into the body; said of diagnostic techniques. [EU]

**Ion Exchange:** Reversible chemical reaction between a solid, often an ION exchange resin, and a fluid whereby ions may be exchanged from one substance to another. This technique is used in water purification, in research, and in industry. [NIH]

**Ionization:** 1. Any process by which a neutral atom gains or loses electrons, thus acquiring a net charge, as the dissociation of a substance in solution into ions or ion production by the passage of radioactive particles. 2. Iontophoresis. [EU]

**Ions:** An atom or group of atoms that have a positive or negative electric charge due to a gain (negative charge) or loss (positive charge) of one or more electrons. Atoms with a positive charge are known as cations; those with a negative charge are anions. [NIH]

**Iontophoresis:** Therapeutic introduction of ions of soluble salts into tissues by means of electric current. In medical literature it is commonly used to indicate the process of increasing the penetration of drugs into surface tissues by the application of electric current. It has nothing to do with ion exchange, air ionization nor phonophoresis, none of which requires current. [NIH]

**Joint:** The point of contact between elements of an animal skeleton with the parts that surround and support it. [NIH]

**Kallidin:** A decapeptide bradykinin homolog produced by the action of tissue and glandular kallikreins on low-molecular-weight kininogen. It is a smooth-muscle stimulant and hypotensive agent that functions through vasodilatation. [NIH]

**Kb:** A measure of the length of DNA fragments, 1 Kb = 1000 base pairs. The largest DNA fragments are up to 50 kilobases long. [NIH]

**Lesion:** An area of abnormal tissue change. [NIH]

**Library Services:** Services offered to the library user. They include reference and circulation. [NIH]

**Ligament:** A band of fibrous tissue that connects bones or cartilages, serving to support and strengthen joints. [EU]

**Localized:** Cancer which has not metastasized yet. [NIH]

**Loop:** A wire usually of platinum bent at one end into a small loop (usually 4 mm inside diameter) and used in transferring microorganisms. [NIH]

**Low Back Pain:** Acute or chronic pain in the lumbar or sacral regions, which may be associated with musculo-ligamentous sprains and strains; intervertebral disk displacement; and other conditions. [NIH]

**Lumbar:** Pertaining to the loins, the part of the back between the thorax and the pelvis. [EU]

**Lunate:** A curved sulcus of the lateral surface which forms the anterior limit of the visual cortex. [NIH]

**Luxation:** The displacement of the particular surface of a bone from its normal joint, without fracture. [NIH]

**Lymph:** The almost colorless fluid that travels through the lymphatic system and carries cells that help fight infection and disease. [NIH]

**Lymph node:** A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Also known as a lymph gland. Lymph nodes are spread out along lymphatic vessels and contain many lymphocytes, which filter the lymphatic fluid (lymph). [NIH]

**Magnetic Resonance Imaging:** Non-invasive method of demonstrating internal anatomy based on the principle that atomic nuclei in a strong magnetic field absorb pulses of radiofrequency energy and emit them as radiowaves which can be reconstructed into computerized images. The concept includes proton spin tomographic techniques. [NIH]

**Medial:** Lying near the midsagittal plane of the body; opposed to lateral. [NIH]

**Median Nerve:** A major nerve of the upper extremity. In humans, the fibers of the median nerve originate in the lower cervical and upper thoracic spinal cord (usually C6 to T1), travel via the brachial plexus, and supply sensory and motor innervation to parts of the forearm and hand. [NIH]

**Mediator:** An object or substance by which something is mediated, such as (1) a structure of the nervous system that transmits impulses eliciting a specific response; (2) a chemical substance (transmitter substance) that induces activity in an excitable tissue, such as nerve or muscle; or (3) a substance released from cells as the result of the interaction of antigen with antibody or by the action of antigen with a sensitized lymphocyte. [EU]

**Medical Records:** Recording of pertinent information concerning patient's illness or illnesses. [NIH]

**MEDLINE:** An online database of MEDLARS, the computerized bibliographic Medical Literature Analysis and Retrieval System of the National Library of Medicine. [NIH]

**Membrane:** A very thin layer of tissue that covers a surface. [NIH]

**Mesenchymal:** Refers to cells that develop into connective tissue, blood vessels, and lymphatic tissue. [NIH]

**MI:** Myocardial infarction. Gross necrosis of the myocardium as a result of interruption of the blood supply to the area; it is almost always caused by atherosclerosis of the coronary arteries, upon which coronary thrombosis is usually superimposed. [NIH]

**Microdialysis:** A technique for measuring extracellular concentrations of substances in tissues, usually *in vivo*, by means of a small probe equipped with a semipermeable membrane. Substances may also be introduced into the extracellular space through the membrane. [NIH]

**Microscopy:** The application of microscope magnification to the study of materials that cannot be properly seen by the unaided eye. [NIH]

**Mineralocorticoids:** A group of corticosteroids primarily associated with the regulation of water and electrolyte balance. This is accomplished through the effect on ion transport in renal tubules, resulting in retention of sodium and loss of potassium. Mineralocorticoid secretion is itself regulated by plasma volume, serum potassium, and angiotensin II. [NIH]

**Mobilization:** The process of making a fixed part or stored substance mobile, as by separating a part from surrounding structures to make it accessible for an operative procedure or by causing release into the circulation for body use of a substance stored in the body. [EU]

**Modification:** A change in an organism, or in a process in an organism, that is acquired

from its own activity or environment. [NIH]

**Molecular:** Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

**Molecule:** A chemical made up of two or more atoms. The atoms in a molecule can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms. [NIH]

**Mononuclear:** A cell with one nucleus. [NIH]

**Morphine:** The principal alkaloid in opium and the prototype opiate analgesic and narcotic. Morphine has widespread effects in the central nervous system and on smooth muscle. [NIH]

**Motility:** The ability to move spontaneously. [EU]

**Motion Sickness:** Sickness caused by motion, as sea sickness, train sickness, car sickness, and air sickness. [NIH]

**Musculature:** The muscular apparatus of the body, or of any part of it. [EU]

**Myocardium:** The muscle tissue of the heart composed of striated, involuntary muscle known as cardiac muscle. [NIH]

**Myositis:** Inflammation of a voluntary muscle. [EU]

**Narcotic:** 1. Pertaining to or producing narcosis. 2. An agent that produces insensibility or stupor, applied especially to the opioids, i.e. to any natural or synthetic drug that has morphine-like actions. [EU]

**Nausea:** An unpleasant sensation in the stomach usually accompanied by the urge to vomit. Common causes are early pregnancy, sea and motion sickness, emotional stress, intense pain, food poisoning, and various enteroviruses. [NIH]

**Neck Pain:** Discomfort or more intense forms of pain that are localized to the cervical region. This term generally refers to pain in the posterior or lateral regions of the neck. [NIH]

**Necrosis:** A pathological process caused by the progressive degradative action of enzymes that is generally associated with severe cellular trauma. It is characterized by mitochondrial swelling, nuclear flocculation, uncontrolled cell lysis, and ultimately cell death. [NIH]

**Need:** A state of tension or dissatisfaction felt by an individual that impels him to action toward a goal he believes will satisfy the impulse. [NIH]

**Neoplastic:** Pertaining to or like a neoplasm (= any new and abnormal growth); pertaining to neoplasia (= the formation of a neoplasm). [EU]

**Nerve:** A cordlike structure of nervous tissue that connects parts of the nervous system with other tissues of the body and conveys nervous impulses to, or away from, these tissues. [NIH]

**Nervous System:** The entire nerve apparatus composed of the brain, spinal cord, nerves and ganglia. [NIH]

**Neural:** 1. Pertaining to a nerve or to the nerves. 2. Situated in the region of the spinal axis, as the neural arch. [EU]

**Neurons:** The basic cellular units of nervous tissue. Each neuron consists of a body, an axon, and dendrites. Their purpose is to receive, conduct, and transmit impulses in the nervous system. [NIH]

**Neuropathy:** A problem in any part of the nervous system except the brain and spinal cord. Neuropathies can be caused by infection, toxic substances, or disease. [NIH]

**Neuropeptide:** A member of a class of protein-like molecules made in the brain. Neuropeptides consist of short chains of amino acids, with some functioning as neurotransmitters and some functioning as hormones. [NIH]

**Nuclei:** A body of specialized protoplasm found in nearly all cells and containing the chromosomes. [NIH]

**Opium:** The air-dried exudate from the unripe seed capsule of the opium poppy, *Papaver somniferum*, or its variant, *P. album*. It contains a number of alkaloids, but only a few - morphine, codeine, and papaverine - have clinical significance. Opium has been used as an analgesic, antitussive, antidiarrheal, and antispasmodic. [NIH]

**Orbital:** Pertaining to the orbit (= the bony cavity that contains the eyeball). [EU]

**Orthotic Devices:** Apparatus used to support, align, prevent, or correct deformities or to improve the function of movable parts of the body. [NIH]

**Osteoarthritis:** A progressive, degenerative joint disease, the most common form of arthritis, especially in older persons. The disease is thought to result not from the aging process but from biochemical changes and biomechanical stresses affecting articular cartilage. In the foreign literature it is often called osteoarthrosis deformans. [NIH]

**Oxidation:** The act of oxidizing or state of being oxidized. Chemically it consists in the increase of positive charges on an atom or the loss of negative charges. Most biological oxidations are accomplished by the removal of a pair of hydrogen atoms (dehydrogenation) from a molecule. Such oxidations must be accompanied by reduction of an acceptor molecule. Univalent o. indicates loss of one electron; divalent o., the loss of two electrons. [EU]

**Palliative:** 1. Affording relief, but not cure. 2. An alleviating medicine. [EU]

**Palpation:** Application of fingers with light pressure to the surface of the body to determine consistence of parts beneath in physical diagnosis; includes palpation for determining the outlines of organs. [NIH]

**Patient Education:** The teaching or training of patients concerning their own health needs. [NIH]

**Pelvic:** Pertaining to the pelvis. [EU]

**Peptide:** Any compound consisting of two or more amino acids, the building blocks of proteins. Peptides are combined to make proteins. [NIH]

**Percutaneous:** Performed through the skin, as injection of radiopaque material in radiological examination, or the removal of tissue for biopsy accomplished by a needle. [EU]

**Perforation:** 1. The act of boring or piercing through a part. 2. A hole made through a part or substance. [EU]

**Perivascular:** Situated around a vessel. [EU]

**Perspiration:** Sweating; the functional secretion of sweat. [EU]

**Pharmacologic:** Pertaining to pharmacology or to the properties and reactions of drugs. [EU]

**Phonophoresis:** Use of ultrasound to increase the percutaneous adsorption of drugs. [NIH]

**Physical Examination:** Systematic and thorough inspection of the patient for physical signs of disease or abnormality. [NIH]

**Physical Medicine:** A medical specialty concerned with the use of physical agents, mechanical apparatus, and manipulation in rehabilitating physically diseased or injured patients. [NIH]

**Pilot study:** The initial study examining a new method or treatment. [NIH]

**Pituitary Gland:** A small, unpaired gland situated in the sella turcica tissue. It is connected to the hypothalamus by a short stalk. [NIH]

**Platinum:** Platinum. A heavy, soft, whitish metal, resembling tin, atomic number 78, atomic

weight 195.09, symbol Pt. (From Dorland, 28th ed) It is used in manufacturing equipment for laboratory and industrial use. It occurs as a black powder (platinum black) and as a spongy substance (spongy platinum) and may have been known in Pliny's time as "alutiae". [NIH]

**Poisoning:** A condition or physical state produced by the ingestion, injection or inhalation of, or exposure to a deleterious agent. [NIH]

**Posterior:** Situated in back of, or in the back part of, or affecting the back or dorsal surface of the body. In lower animals, it refers to the caudal end of the body. [EU]

**Postoperative:** After surgery. [NIH]

**Potassium:** An element that is in the alkali group of metals. It has an atomic symbol K, atomic number 19, and atomic weight 39.10. It is the chief cation in the intracellular fluid of muscle and other cells. Potassium ion is a strong electrolyte and it plays a significant role in the regulation of fluid volume and maintenance of the water-electrolyte balance. [NIH]

**Practicability:** A non-standard characteristic of an analytical procedure. It is dependent on the scope of the method and is determined by requirements such as sample throughput and costs. [NIH]

**Practice Guidelines:** Directions or principles presenting current or future rules of policy for the health care practitioner to assist him in patient care decisions regarding diagnosis, therapy, or related clinical circumstances. The guidelines may be developed by government agencies at any level, institutions, professional societies, governing boards, or by the convening of expert panels. The guidelines form a basis for the evaluation of all aspects of health care and delivery. [NIH]

**Prevalence:** The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

**Probe:** An instrument used in exploring cavities, or in the detection and dilatation of strictures, or in demonstrating the potency of channels; an elongated instrument for exploring or sounding body cavities. [NIH]

**Progesterone:** Pregn-4-ene-3,20-dione. The principal progestational hormone of the body, secreted by the corpus luteum, adrenal cortex, and placenta. Its chief function is to prepare the uterus for the reception and development of the fertilized ovum. It acts as an antiovarian agent when administered on days 5-25 of the menstrual cycle. [NIH]

**Progressive:** Advancing; going forward; going from bad to worse; increasing in scope or severity. [EU]

**Projection:** A defense mechanism, operating unconsciously, whereby that which is emotionally unacceptable in the self is rejected and attributed (projected) to others. [NIH]

**Pronation:** Applies to movements of the forearm in turning the palm backward or downward or when applied to the foot, a combination of eversion and abduction movements in the tarsal and metatarsal joints, (turning the foot up and in toward the midline of the body). [NIH]

**Prospective study:** An epidemiologic study in which a group of individuals (a cohort), all free of a particular disease and varying in their exposure to a possible risk factor, is followed over a specific amount of time to determine the incidence rates of the disease in the exposed and unexposed groups. [NIH]

**Prostate:** A gland in males that surrounds the neck of the bladder and the urethra. It secretes a substance that liquifies coagulated semen. It is situated in the pelvic cavity behind the lower part of the pubic symphysis, above the deep layer of the triangular ligament, and rests

upon the rectum. [NIH]

**Protein S:** The vitamin K-dependent cofactor of activated protein C. Together with protein C, it inhibits the action of factors VIIIa and Va. A deficiency in protein S can lead to recurrent venous and arterial thrombosis. [NIH]

**Proteins:** Polymers of amino acids linked by peptide bonds. The specific sequence of amino acids determines the shape and function of the protein. [NIH]

**Proteolytic:** 1. Pertaining to, characterized by, or promoting proteolysis. 2. An enzyme that promotes proteolysis (= the splitting of proteins by hydrolysis of the peptide bonds with formation of smaller polypeptides). [EU]

**Proximal:** Nearest; closer to any point of reference; opposed to distal. [EU]

**Public Policy:** A course or method of action selected, usually by a government, from among alternatives to guide and determine present and future decisions. [NIH]

**Racquet Sports:** Games in which players use a racquet to hit a ball or similar type object. [NIH]

**Radiation:** Emission or propagation of electromagnetic energy (waves/rays), or the waves/rays themselves; a stream of electromagnetic particles (electrons, neutrons, protons, alpha particles) or a mixture of these. The most common source is the sun. [NIH]

**Radioactive:** Giving off radiation. [NIH]

**Radiography:** Examination of any part of the body for diagnostic purposes by means of roentgen rays, recording the image on a sensitized surface (such as photographic film). [NIH]

**Radius:** The lateral bone of the forearm. [NIH]

**Randomized:** Describes an experiment or clinical trial in which animal or human subjects are assigned by chance to separate groups that compare different treatments. [NIH]

**Rarefaction:** The reduction of the density of a substance; the attenuation of a gas. [NIH]

**Receptor:** A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific physiologic effect in the cell. [NIH]

**Receptors, Serotonin:** Cell-surface proteins that bind serotonin and trigger intracellular changes which influence the behavior of cells. Several types of serotonin receptors have been recognized which differ in their pharmacology, molecular biology, and mode of action. [NIH]

**Rectum:** The last 8 to 10 inches of the large intestine. [NIH]

**Recurrence:** The return of a sign, symptom, or disease after a remission. [NIH]

**Refer:** To send or direct for treatment, aid, information, de decision. [NIH]

**Regimen:** A treatment plan that specifies the dosage, the schedule, and the duration of treatment. [NIH]

**Remission:** A decrease in or disappearance of signs and symptoms of cancer. In partial remission, some, but not all, signs and symptoms of cancer have disappeared. In complete remission, all signs and symptoms of cancer have disappeared, although there still may be cancer in the body. [NIH]

**Retrospective:** Looking back at events that have already taken place. [NIH]

**Retrospective study:** A study that looks backward in time, usually using medical records and interviews with patients who already have or had a disease. [NIH]

**Rheumatism:** A group of disorders marked by inflammation or pain in the connective tissue structures of the body. These structures include bone, cartilage, and fat. [NIH]

**Rheumatoid:** Resembling rheumatism. [EU]

**Rheumatoid arthritis:** A form of arthritis, the cause of which is unknown, although infection, hypersensitivity, hormone imbalance and psychologic stress have been suggested as possible causes. [NIH]

**Risk factor:** A habit, trait, condition, or genetic alteration that increases a person's chance of developing a disease. [NIH]

**Rotator:** A muscle by which a part can be turned circularly. [NIH]

**Rotator Cuff:** The musculotendinous sheath formed by the supraspinatus, infraspinatus, subscapularis, and teres minor muscles. These help stabilize the head of the humerus in the glenoid fossa and allow for rotation of the shoulder joint about its longitudinal axis. [NIH]

**Rubber:** A high-molecular-weight polymeric elastomer derived from the milk juice (latex) of *Hevea brasiliensis* and other trees. It is a substance that can be stretched at room temperature to at least twice its original length and after releasing the stress, retract rapidly, and recover its original dimensions fully. Synthetic rubber is made from many different chemicals, including styrene, acrylonitrile, ethylene, propylene, and isoprene. [NIH]

**Salicylate:** Non-steroidal anti-inflammatory drugs. [NIH]

**Saponins:** Sapogenin glycosides. A type of glycoside widely distributed in plants. Each consists of a sapogenin as the aglycon moiety, and a sugar. The sapogenin may be a steroid or a triterpene and the sugar may be glucose, galactose, a pentose, or a methylpentose. Sapogenins are poisonous towards the lower forms of life and are powerful hemolytics when injected into the blood stream able to dissolve red blood cells at even extreme dilutions. [NIH]

**Screening:** Checking for disease when there are no symptoms. [NIH]

**Secretion:** 1. The process of elaborating a specific product as a result of the activity of a gland; this activity may range from separating a specific substance of the blood to the elaboration of a new chemical substance. 2. Any substance produced by secretion. [EU]

**Semen:** The thick, yellowish-white, viscid fluid secretion of male reproductive organs discharged upon ejaculation. In addition to reproductive organ secretions, it contains spermatozoa and their nutrient plasma. [NIH]

**Serotonin:** A biochemical messenger and regulator, synthesized from the essential amino acid L-tryptophan. In humans it is found primarily in the central nervous system, gastrointestinal tract, and blood platelets. Serotonin mediates several important physiological functions including neurotransmission, gastrointestinal motility, hemostasis, and cardiovascular integrity. Multiple receptor families (receptors, serotonin) explain the broad physiological actions and distribution of this biochemical mediator. [NIH]

**Shock:** The general bodily disturbance following a severe injury; an emotional or moral upset occasioned by some disturbing or unexpected experience; disruption of the circulation, which can upset all body functions: sometimes referred to as circulatory shock. [NIH]

**Side effect:** A consequence other than the one(s) for which an agent or measure is used, as the adverse effects produced by a drug, especially on a tissue or organ system other than the one sought to be benefited by its administration. [EU]

**Skeletal:** Having to do with the skeleton (bony part of the body). [NIH]

**Skeleton:** The framework that supports the soft tissues of vertebrate animals and protects many of their internal organs. The skeletons of vertebrates are made of bone and/or cartilage. [NIH]

**Smooth muscle:** Muscle that performs automatic tasks, such as constricting blood vessels. [NIH]

**Soft tissue:** Refers to muscle, fat, fibrous tissue, blood vessels, or other supporting tissue of the body. [NIH]

**Spatial disorientation:** Loss of orientation in space where person does not know which way is up. [NIH]

**Specialist:** In medicine, one who concentrates on 1 special branch of medical science. [NIH]

**Spinal cord:** The main trunk or bundle of nerves running down the spine through holes in the spinal bone (the vertebrae) from the brain to the level of the lower back. [NIH]

**Splint:** A rigid appliance used for the immobilization of a part or for the correction of deformity. [NIH]

**Sports Equipment:** Equipment required for engaging in a sport (such as balls, bats, rackets, skis, skates, ropes, weights) and devices for the protection of athletes during their performance (such as masks, gloves, mouth pieces). [NIH]

**Sprains and Strains:** A collective term for muscle and ligament injuries without dislocation or fracture. A sprain is a joint injury in which some of the fibers of a supporting ligament are ruptured but the continuity of the ligament remains intact. A strain is an overstretching or overexertion of some part of the musculature. [NIH]

**Steroid:** A group name for lipids that contain a hydrogenated cyclopentanoperhydrophenanthrene ring system. Some of the substances included in this group are progesterone, adrenocortical hormones, the gonadal hormones, cardiac aglycones, bile acids, sterols (such as cholesterol), toad poisons, saponins, and some of the carcinogenic hydrocarbons. [EU]

**Stimulant:** 1. Producing stimulation; especially producing stimulation by causing tension on muscle fibre through the nervous tissue. 2. An agent or remedy that produces stimulation. [EU]

**Stimulus:** That which can elicit or evoke action (response) in a muscle, nerve, gland or other excitable issue, or cause an augmenting action upon any function or metabolic process. [NIH]

**Stomach:** An organ of digestion situated in the left upper quadrant of the abdomen between the termination of the esophagus and the beginning of the duodenum. [NIH]

**Strained:** A stretched condition of a ligament. [NIH]

**Stress:** Forcibly exerted influence; pressure. Any condition or situation that causes strain or tension. Stress may be either physical or psychologic, or both. [NIH]

**Stroke:** Sudden loss of function of part of the brain because of loss of blood flow. Stroke may be caused by a clot (thrombosis) or rupture (hemorrhage) of a blood vessel to the brain. [NIH]

**Styrene:** A colorless, toxic liquid with a strong aromatic odor. It is used to make rubbers, polymers and copolymers, and polystyrene plastics. [NIH]

**Subarachnoid:** Situated or occurring between the arachnoid and the pia mater. [EU]

**Subcutaneous:** Beneath the skin. [NIH]

**Substrate:** A substance upon which an enzyme acts. [EU]

**Supination:** Applies to the movements of the forearm in turning the palm forward or upward and when applied to the foot, a combination of adduction and inversion of the foot. [NIH]

**Suppression:** A conscious exclusion of disapproved desire contrary with repression, in which the process of exclusion is not conscious. [NIH]

**Sweat:** The fluid excreted by the sweat glands. It consists of water containing sodium chloride, phosphate, urea, ammonia, and other waste products. [NIH]



- Symphysis:** A secondary cartilaginous joint. [NIH]
- Synovial:** Of pertaining to, or secreting synovia. [EU]
- Synovial Membrane:** The inner membrane of a joint capsule surrounding a freely movable joint. It is loosely attached to the external fibrous capsule and secretes synovial fluid. [NIH]
- Systemic:** Affecting the entire body. [NIH]
- Systemic disease:** Disease that affects the whole body. [NIH]
- Tendinitis:** Inflammation of tendons and of tendon-muscle attachments. [EU]
- Tendonitis:** Inflammation of tendons attached to the biceps muscle, i. e. the main flexor muscle of the upper arm. [NIH]
- Tennis Elbow:** A condition characterized by pain in or near the lateral humeral epicondyle or in the forearm extensor muscle mass as a result of unusual strain. It occurs in tennis players as well as housewives, artisans, and violinists. [NIH]
- Tenotomy:** The cutting of a tendon. [NIH]
- Therapeutics:** The branch of medicine which is concerned with the treatment of diseases, palliative or curative. [NIH]
- Thermal:** Pertaining to or characterized by heat. [EU]
- Thermography:** Measurement of the regional temperature of the body or an organ by infrared sensing devices, based on self-emanating infrared radiation. [NIH]
- Thigh:** A leg; in anatomy, any elongated process or part of a structure more or less comparable to a leg. [NIH]
- Thoracic:** Having to do with the chest. [NIH]
- Thrombosis:** The formation or presence of a blood clot inside a blood vessel. [NIH]
- Tin:** A trace element that is required in bone formation. It has the atomic symbol Sn, atomic number 50, and atomic weight 118.71. [NIH]
- Tissue:** A group or layer of cells that are alike in type and work together to perform a specific function. [NIH]
- Topical:** On the surface of the body. [NIH]
- Toxic:** Having to do with poison or something harmful to the body. Toxic substances usually cause unwanted side effects. [NIH]
- Toxicity:** The quality of being poisonous, especially the degree of virulence of a toxic microbe or of a poison. [EU]
- Toxicology:** The science concerned with the detection, chemical composition, and pharmacologic action of toxic substances or poisons and the treatment and prevention of toxic manifestations. [NIH]
- Transfection:** The uptake of naked or purified DNA into cells, usually eukaryotic. It is analogous to bacterial transformation. [NIH]
- Trauma:** Any injury, wound, or shock, must frequently physical or structural shock, producing a disturbance. [NIH]
- Treatment Outcome:** Evaluation undertaken to assess the results or consequences of management and procedures used in combating disease in order to determine the efficacy, effectiveness, safety, practicability, etc., of these interventions in individual cases or series. [NIH]
- Trees:** Woody, usually tall, perennial higher plants (Angiosperms, Gymnosperms, and some Pterophyta) having usually a main stem and numerous branches. [NIH]

**Triamcinolone Acetonide:** An esterified form of triamcinolone. It is an anti-inflammatory glucocorticoid used topically in the treatment of various skin disorders. Intralesional, intramuscular, and intra-articular injections are also administered under certain conditions. [NIH]

**Tryptophan:** An essential amino acid that is necessary for normal growth in infants and for nitrogen balance in adults. It is a precursor serotonin and niacin. [NIH]

**Ulna:** The long and medial bone of the forearm. [NIH]

**Ulnar Nerve:** A major nerve of the upper extremity. In humans, the fibers of the ulnar nerve originate in the lower cervical and upper thoracic spinal cord (usually C7 to T1), travel via the medial cord of the brachial plexus, and supply sensory and motor innervation to parts of the hand and forearm. [NIH]

**Unconscious:** Experience which was once conscious, but was subsequently rejected, as the "personal unconscious". [NIH]

**Urethane:** Antineoplastic agent that is also used as a veterinary anesthetic. It has also been used as an intermediate in organic synthesis. Urethane is suspected to be a carcinogen. [NIH]

**Urethra:** The tube through which urine leaves the body. It empties urine from the bladder. [NIH]

**Urinary:** Having to do with urine or the organs of the body that produce and get rid of urine. [NIH]

**Urine:** Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra. [NIH]

**Uterus:** The small, hollow, pear-shaped organ in a woman's pelvis. This is the organ in which a fetus develops. Also called the womb. [NIH]

**Vasodilator:** An agent that widens blood vessels. [NIH]

**Veins:** The vessels carrying blood toward the heart. [NIH]

**Venous:** Of or pertaining to the veins. [EU]

**Venous blood:** Blood that has given up its oxygen to the tissues and carries carbon dioxide back for gas exchange. [NIH]

**Vertebral:** Of or pertaining to a vertebra. [EU]

**Veterinary Medicine:** The medical science concerned with the prevention, diagnosis, and treatment of diseases in animals. [NIH]

**Virulence:** The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

**Visual Cortex:** Area of the occipital lobe concerned with vision. [NIH]

**Vivo:** Outside of or removed from the body of a living organism. [NIH]

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