



Guideline Summary NGC-7429

Guideline Title

Appropriateness of physical and sporting activity for those with scoliosis.

Bibliographic Source(s)

American Chiropractic Board of Sports Physicians (ACBSP). Appropriateness of physical and sporting activity for those with scoliosis. Estherville (IA): American Chiropractic Board of Sports Physicians (ACBSP); 2009 Jun 5. 9 p. [12 references]

Guideline Status

This is the current release of the guideline.

Scope

Disease/Condition(s)

Scoliosis

Guideline Category

Counseling

Management

Prevention

Rehabilitation

Risk Assessment

Clinical Specialty

Cardiology

Chiropractic

Endocrinology

Family Practice

Neurological Surgery

Neurology

Nursing

Orthopedic Surgery

Pediatrics

Physical Medicine and Rehabilitation

Sports Medicine

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Chiropractors

Health Care Providers

Nurses

Patients

Physical Therapists
Physician Assistants
Physicians
Students

Guideline Objective(s)

To summarize the American Chiropractic Board of Sports Physicians' recommendations regarding the appropriateness of physical and sporting activity for people with scoliosis

Target Population

Athletes and active people with scoliosis

Note: These guidelines are most appropriate for people who have idiopathic scoliosis. For people who have scoliosis as a condition secondary to another concern (e.g., spinal degeneration, collagen disorders, Down's syndrome, compression fracture, or certain genetic skeletal disorders) or for patients with multiple surgical procedures, these guidelines, or portions of these guidelines, may not be applicable.

Interventions and Practices Considered

Management/Prevention

Patient education regarding appropriate recreational and competitive physical activity and exercise for those who have scoliosis

Note: Recommendations pertaining to the effectiveness or efficacy of therapeutic exercise in the management of pain or deformity associated with scoliosis were not included. This guideline pertains to physical activity appropriateness and safety for those with scoliosis.

Major Outcomes Considered

Participation in sports or recreational physical activity by scoliosis patients

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

PubMed and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) were searched using EBSCOhost Web; the Index to Chiropractic Literature (ICL) was searched directly at its site (www.chiroindex.org). Searches for all databases were from their starting dates through July 2008, and they were conducted during the month of August 2008. The search strategy combined the term *scoliosis* with a variety of terms relevant to the topic of study (*sport; sports; athletic injuries; athletic participation; sport performance; public health; exercise*). The guideline authors sought out additional articles referenced in the articles retrieved. The National Guideline Clearinghouse (NGC) was searched for existing guidelines pertinent to physical activity participation for people with scoliosis. *Scoliosis* was the only search term, and all available guidelines were reviewed for relevance. The authors also investigated Web sites of organizations/agencies with a potential interest in scoliosis. These Web sites were selected by searching an Internet browser using the term *scoliosis*. All 18 organizations returned by the search were searched for position/white papers about scoliosis and physical activity (available in the systematic review as Table 2 [see "Availability of Companion Documents" field]).

Articles (all languages and all research designs) assessing or discussing the appropriateness of physical activity for people with all types of scoliosis were included. Articles published in languages other than English were translated to English using a software translator (Google Language Tools; Google Inc, Mountain View, CA). Only studies from peer reviewed scholarly journals were included. Articles from trade magazines and nonscholarly sources were excluded, as were letters to the editor and articles not specific to the use or recommendations of physical activity participation for people with scoliosis. Reports of therapeutic exercises (e.g., stretching, strengthening) used as a treatment to correct the curvature of scoliosis were excluded because of their intentional use as a therapeutic intervention, rather than as a means to merely exercise or maintain physical activity. Abstracts of conference proceedings were not included because of the high rate of conference presentations that are never published. Web sites of private health care practitioners, private individuals, and group practices were excluded.

Number of Source Documents

Eight hundred ninety-eight initial citations were found during the literature search. After applying the exclusion criteria, 65 potential studies were identified. Based upon consensus, 11 articles were acceptable for review and formed the basis for this guideline. No guidelines found in the National Guideline Clearinghouse addressed physical activity/athletic participation for people with scoliosis and none of the 18 organization Websites reviewed contained a position statement regarding the appropriateness of physical activity for people with scoliosis.

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence

The Oxford Centre for Evidence-based Medicine levels of evidence rating scheme was used. In this system, evidence is rated for quality from levels 1 (best quality) to 5 (lowest quality) primarily on the research design. The levels of evidence for therapy, prevention, etiology, or harm studies are as follows:

1a - Systematic review with homogeneity of randomized clinical trials

1b - Individual randomized clinical trial with narrow confidence interval

1c - All or none studies

2a - Systematic review with homogeneity of cohort studies

2b - Individual cohort study (including low quality randomized clinical trial)


2c - Outcomes research; ecological studies

3a - Systematic review with homogeneity of case-control studies

3b - Individual case-control study

4 - Case series and poor quality cohort and case-control studies

5 - Expert opinion without explicit critical appraisal, or based on physiology, bench research, or "first principles"

Source: Phillips B, Ball C, Sackett D, Badenoch D, Straus S, Haynes B, Dawes M. Oxford Centre for Evidence-based Medicine levels of evidence. Oxford: Centre for Evidence-based Medicine; 2001 [cited 2008 Apr 1]. Available from: <http://www.cebm.net/index.aspx?o=1025> .

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Once an article was included, the citation, study design, principal findings, and other pertinent notes were logged in a summary table. Differences in opinions of the authors regarding the particular inclusion or exclusion of any articles were settled by discussion and e-mail correspondence until consensus was achieved.

Included studies were rated for quality using the Oxford Centre for Evidence-based Medicine levels of evidence rating scheme.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The level of evidence and recommendations from the reviewed studies that pertained to sport and exercise activity and scoliosis were tracked in a spreadsheet and analyzed for similarity or contradictions. Areas of congruence were used to make recommendations for this guideline and areas of dissimilarity were identified as areas in need of further investigation before recommendations can be made. The materials and recommendations were reviewed by the committee and consensus was obtained.

Rating Scheme for the Strength of the Recommendations

The Oxford Centre for Evidence-based Medicine grades of recommendation were used. This grading system is used in conjunction with the levels of evidence scheme described above in the "Rating Scheme for the Strength of the Evidence." The strength of recommendations is given by considering the quality of the evidence obtained. The scale of strength of recommendations is as follows:

A. Consistent level 1 studies

B. Consistent level 2 or 3 studies or extrapolations from level 1 studies

C. Level 4 studies or extrapolations from level 2 or 3 studies

D. Level 5 evidence or troublingly inconsistent or inconclusive studies of any level

Source: Phillips B, Ball C, Sackett D, Badenoch D, Straus S, Haynes B, Dawes M. Oxford Centre for Evidence-based Medicine levels of evidence. Oxford: Centre for Evidence-based Medicine; 2001 [cited 2008 Apr 1]. Available from: <http://www.cebm.net/index.aspx?o=1025> .

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Not stated

Recommendations

Major Recommendations

Levels of evidence (**1a–5**) and grades of recommendation (**A–D**) are defined at the end of the "Major Recommendations" field.

The three primary categories for treating the curvature associated with scoliosis are observation, bracing, and surgery. These recommendations follow that classification.

- Brace-treated and surgically treated scoliosis patients have demonstrated that they can physically participate in sports activities at the same level as controls (**Level of evidence: 2 level 3b studies; Grade of recommendation: C**).
- Brace-treated or observation-only scoliosis patients are encouraged to participate in sports and physical activity (**Level of evidence: 1 level 3b study, 5 level 5 studies; Grade of recommendation: D**).
- Nonsurgically treated scoliosis is not a contraindication to sports participation (**Level of evidence: 3 level 5 studies; Grade of recommendation: D**).
- Brace-treated scoliosis patients are encouraged to exercise with their braces on; however, exercise may also be done outside of the brace (**Level of evidence: 4 level 5 studies; Grade of recommendation: D**).
- Sports and exercise may be commenced in the months after surgery for scoliosis correction; however, there is no high-quality evidence guiding return to sport activity. Currently, return to activity is based upon the opinion of the attending surgeon (**Level of evidence: 2 level 5 studies; Grade of recommendation: D**) and expert opinions without explicit critical appraisal (**Level of evidence: 5 level 5 studies; Grade of recommendation: D**). No clear evidence or guideline is offered regarding contact and/or collision sports after surgery.
- A potential association between elite-level competition in particular sports at an early age and an increased prevalence of scoliosis has been reported (**Level of evidence: 1 level 3b study, 1 level 4 study, 5 level 5 studies; Grade of recommendation: C**).

Definitions:

Level of Evidence

- 1a** - Systematic review with homogeneity of randomized clinical trials
- 1b** - Individual randomized clinical trial with narrow confidence interval
- 1c** - All or none studies
- 2a** - Systematic review with homogeneity of cohort studies
- 2b** - Individual cohort study (including low quality randomized clinical trial)
- 2c** - Outcomes research; ecological studies
- 3a** - Systematic review with homogeneity of case-control studies
- 3b** - Individual case-control study
- 4** - Case series and poor quality cohort and case-control studies
- 5** - Expert opinion without explicit critical appraisal, or based on physiology, bench research, or "first principles"

Grade of Recommendation

- A. Consistent level 1 studies
- B. Consistent level 2 or 3 studies or extrapolations from level 1 studies
- C. Level 4 studies or extrapolations from level 2 or 3 studies
- D. Level 5 evidence or troublingly inconsistent or inconclusive studies of any level

Clinical Algorithm(s)

None provided

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

People with scoliosis should find that these guidelines help them to understand that exercise is encouraged in the available literature and not contraindicated, even for those who have had surgery. Exercise is beneficial for the cardiovascular system, musculoskeletal system, weight control, stress management, decreased risk of osteoporosis, balance, and psychosocial well being. The information is also of use for clinicians to encourage individuals with scoliosis and to let them know that scoliosis is not a reason to avoid exercise.

Potential Harms

There is little obvious harm associated with physical activity and scoliosis. Following surgery, the risk for injury is higher than for those undergoing observation or bracing and patients desiring to return to exercise and sport must do so under the direction of their surgeon. Not following specific instructions provided by one's doctor could be harmful.

Contraindications

Contraindications

These guidelines may be inadvisable for those who have had multiple surgical procedures to correct scoliotic deformity or have other comorbidities that preclude exercise or sport. Before beginning any exercise program or athletic involvement, persons with scoliosis should consult a qualified healthcare professional prior to participation.

Qualifying Statements

Qualifying Statements

The levels of evidence gleaned from the literature were low. Thus, the Major Recommendations are supported by observational studies and expert opinion more than rigorous controlled studies. The present guidelines are based on the best evidence available, but further research is needed to provide better guidance in this area.

Implementation of the Guideline

Description of Implementation Strategy

The guideline will be made available on the National Guideline Clearinghouse (NGC) Web site. The systematic review from which the guideline was derived is available for no cost on the Internet (www.journalchiromed.com). Continuing education and scholarly presentations at conferences and symposia will be used to disseminate the information to relevant interest groups.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness
Staying Healthy

IOM Domain

Patient-centeredness
Safety

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2009 Jun

Guideline Developer(s)

American Chiropractic Board of Sports Physicians - Professional Association

Source(s) of Funding

Internally funded by the American Chiropractic Board of Sports Physicians

Guideline Committee

American Chiropractic Board of Sports Physicians Scoliosis and Physical Activity Guideline Committee

Composition of Group That Authored the Guideline

Guideline Committee: Karen Chaney, DC (private practice, Sacramento, CA); Bart N. Green, DC, MEd (Associate Editor, National University of Health Sciences, Lombard, IL); Darren Hancock, DC (private practice, Chicago, IL); Pat Helma, DC (private practice, Cooper City, Florida; Treasurer, American Chiropractic Board of Sports Physicians); Joe Horriqan, DC

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Financial Disclosures/Conflicts of Interest

The members of this committee had no conflicts of interest, financial or otherwise, with any for-profit or non-profit organization to disclose.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [American Chiropractic Board of Sports Physicians Web site](#).

Availability of Companion Documents

The following is available:

- Green BN, Johnson CD, Moreau W. Is physical activity contraindicated for individuals with scoliosis? A systematic literature review. J Chiro Med. 2009;8:25-37. Available from the [Journal of Chiropractic Medicine](#) and the [American Chiropractic Board of Sports Physicians Web site](#).

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on April 19, 2010. The information was verified by the guideline developer on May 19, 2010.

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