Prevalence Of Low Back Pain In Adolescent Athletes - An Epidemiological Investigation

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Disclosures:

Introduction: Low back pain (LBP) is an epidemiological problem; especially the populations of the Western countries seem to be prone to this symptom. LBP has been frequently described, also for competitive adolescents. Clinical trials addressing the prevalence of LBP in athletes are rare and include predominantly only few sports. The main objective of this study was to analyze the point, one year and lifetime prevalence of LBP in adolescent athletes of more than 20 sports. Additionally the association of LBP with the potential risk factors age, gender, hours of weekly training, years of training, and sports were evaluated.

Methods: Data were collected during a 10 month prospective clinical trial at our Center for Orthopaedics and Traumatology. A total of n=272 young competitive athletes aged 12 to 20a, who visited the Center for their annual medical examinations were included. All athletes completed a questionnaire, followed by a physical examination. The questionnaire was inspected and remaining questions were clarified. The study was approved by the local ethical committee. One hundred fifty nine (58.5%) male and 113 (41.5%) female athletes with the following anthropometrical data were registered: age 15.4±2.0a, body weight 61±13kg, body height 173±11cm and body mass index 20.3±2.4kg/m². A total of 31 different sports were represented. The following 11 sports contained at least 10 athletes: volleyball (n=35), biathlon (n=35), swimming (n=28), canoe racing (n=23), tobogganing (n=19), alpine skiing (n=18), short track (n=17), canoe slalom (n=14), ice skating (n=13), figure skating (n=10), and rowing (n=10). Fifty Athletes of 20 other sports counted less than 10 athletes per sport, and were categorized as “others”. Athletes had been trained competitive sports for 6.0±3.0a. The time of weekly training was 13±5h. Statistical analysis was carried out using SPSS 19.0. For all variables descriptive statistics were performed. In case of metrically and ordinarily scaled data the standard deviation and mean were calculated additionally. The univariate association of potential risk factors with the prevalence of LBP was tested by means of the asymptotic T-test (for continuous variates) and the Fisher’s tests (for binary variates). Locally significant associations were established for p-values < 0.05.

Results: The age for self-reported first occurrence of LBP was 13.1±2.0a. Ninety three athletes (34%) had never experienced LBP in their lives before. One isolated episode of LBP was reported by 13 (4.6%) athletes, 2 to 6 LBP episodes by 109 (40.1%) athletes, and 7 to 11 LBP episodes by 31 (11.0%) athletes. Chronic recurrent LBP with more than 11 episodes was found in 26 (9.6%) participants.

The mean pain score on the VAS for present LBP was 40±20mm, and 30±20mm for the last episode in case of no present LBP. Only 8 (2.9%) athletes were on oral non-steroidal anti-inflammatory drugs (NSAIDs) at the time of examination. Three (7.7%) out of 39 athletes with prevailing pain reported on constant pain during the whole day and 36 (92.3%) complained of intermittent symptoms. In athletes with current LBP pain was increased by coughing and sneezing in only 4 cases. Based on the pain drawings 38 athletes were classified as “LBP without radiation into the leg” and only one as “LBP with radiation into the thigh”. Knee and ankle jerk tests were unremarkably in all athletes. There was no sensory or muscular disturbance found in any athlete. In only one participant the straight leg raising test was rated positive. The association between prevalence of LBP and age of the athletes is shown in Fig. 1. The point prevalence of LBP was 14.3%, one year prevalence was 57.0% and lifetime prevalence was 65.8%. Separated by gender point, one year and lifetime prevalence of LBP in female athletes were 9.7%, 58.4%, and 66.4%, and for male athletes 17.6%, 56.0%, and 65.4%, respectively. No significant association between gender and prevalence of LBP was found. The mean age of athletes with a positive point, one year- and lifetime prevalence of LBP was higher compared to athletes with a negative prevalence (15.9 to 15.4 for point prevalence, 15.8 to 15.0 for one year prevalence, and 15.7 to 14.9 for lifetime prevalence). There was a significant association between age and one year as well as lifetime prevalence of LBP (p=0.002). The relationship between a positive and a negative lifetime prevalence of LBP in the different sports is shown in Fig. 2. There was no significant association between the 12 groups of different sports (point prevalence r=0.270; one year prevalence r=0.367; lifetime prevalence r=0.113). Notably, volleyball players showed significantly higher lifetime prevalence (74.3%) compared to biathletes (45.7%) (p =0.015).

Discussion: Compared to the prevalence of LBP in the general population (all age groups) [1], one year and lifetime prevalence in the adolescent athletes were 50% and 70% higher, respectively. For the general population 20% had persistent LBP for several
months [1]. We only registered 9 (3.3%) athletes with pain duration exceeding 4 weeks. In line with the data from the present investigation several other authors previously interpreted that LBP is a common finding during adolescence [1,2]. Interestingly the athletes in our study demonstrated 159% and 217% higher rates for one year and lifetime prevalence, respectively, compared to young adolescents of the same age who did not participate in competitive sports [2].

**Significance:** Point, one year, and lifetime prevalence of LBP were markedly higher in competitive adolescent athletes compared with age-matched control. LBP is a common symptom in adolescent athletes the prevalence of which correlates with the sports and the individual competitive level. Adolescent athletes with LBP should receive a thorough diagnostic work-up and adapt training and technique correspondingly when indicated.

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Figure 1: Association between low back pain prevalence and age (n=272)
Figure 2: Relationship between existing (positive) and non-existing (negative) lifetime prevalence of low back pain in the different sports \((n=272)\). There was no significant association between the 12 groups of different sports \((r=0.113)\). However, volleyball players had a significantly higher lifetime