

TOPOLOGICAL REGIONS AND FREQUENCY OF PAIN IN YOUNG SWIMMERS

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Original scientific paper

Abstract

The main objective of this study was to identify the frequency and topology pain in 45 young swimmers; and cadets ($N = 25$, mean age = 12.56) and junior ($N = 20$, mean age = 16.00). All swimmers filled the modified SEFIP questionnaire. They had to mark (for any given part of the body), a prominent pain and intensity of the same. T-test and Bartlett's test were used for data analysis. The results of this research led to the conclusion that cadets often feel pain in the shoulder, upper and lower back and knee, while juniors also had pain in the shoulder and lower back, but also in the neck, knee and Journal. We can assume that these results are obtained due to a greater training load in the junior age (no matter whether it is a larger number of training units or on the intensity of training). It can be recommended during the training process to pay more attention to warm-up and stretching (before and after the applied training).

Key words: young swimmers, injury, SEFIP questionnaire, chi-square test

Introduction

Health is important at all stages of life, especially in sports. Physical preparation functional level of swimmers is directly dependent on the health status, such as the realization of the planned training depends on the health level swimmers (Volčanšek, 2002). Swimmers usually start training at an early stage, before it has matured their musculoskeletal system. There is a potential risk of injury if the progress of the young swimmers too rapid or if it is not systematically monitored. Overuse syndrome is the name for a common mechanism of injury in young swimmers who is prone to problems with the shoulder (rotator cuff muscles), lower back and knee joint. Sports doctors identify these specific disorders as swimmer's shoulder, syndrome of back pain caused by a butterfly style, and chest knee. Coaches not only play an important role in identifying early indicators of these injuries, but can also help in the prevention of the way to control the volume of training load, the mechanics of the stroke, then training with weights or other sport and training programs on land (Stager, Tanner, 2005). To prevent injury, it is important to first analyze the persistent problem. For the analysis of this sport we have to know the past, the current situation in swimming, as well as to how it will develop swimming in the future (Colwin, 1993). Due to the large number of detected injuries in young swimmers, it is necessary to understand the legality underdeveloped musculoskeletal system. Skeleton of man represents the skeleton which is connected to the soft tissue (muscles, tendons and ligaments). During Preadolescent, bony skeleton is subject to rapid growth, a factor particularly important for the possibility of injury. Sports injuries are globally classified according to their pathogenesis. So there are those caused by acute trauma and those that are the result of small,

repeated stress or "overuse". The latter represents the most significant injuries in swimming. Their early identification and active management will reduce the possibility for chronic incompetence in addressing the intermittent training (Stager, Tanner, 2005). It is important to distinguish from injury. The main feature of the injury is acute occurrence. Damage is still a chronic character.

Impairment is considered the pathological-anatomical substrate that anamnesis can prove a professional athlete or amateur usually not felt, or cannot remember the time when the damage occurs (Mišković, 2011). Damage is usually the result of a series of consecutive microtrauma (Pečina, 1992). In some studies, according to the Frisch et al., (2009), mentions certain chronic injuries associated with children and adolescents. Taking into account the upper extremities, major injuries overuse injuries related to shoulder pain, rotator cuff tendinopathy and elbow. Taking all these facts into account, it is clear that special attention should be given to work with beginners, ie. With children the prevention of all injuries should be borne in mind. This would mean to remove their risk and cause. It is therefore of great importance ability to obtain reliable feedback on the occurrence of pain (topological region and intensity) in young athletes. As an effective and very simple way of gathering information on the occurrence of pain, questionnaires were tested in measurement characteristics.

This and SEFIP (Self-Estimated Functional Inability because of Pain), which has been used on a sample of dancers (Miletić et al., 2009; Miletić et al., 2011), volleyball players (Stanović et al., 2015) as well as volleyball and handball (Magzan et al., 2015) used in this study.

Objective

Because of this, there is the main objective of this research; determine the topology of pain in swimmers cadets and juniors.

We also aim to determine whether there are statistically significant differences in the incidence of pain between the two groups tested swimmers.

Methods

The sample in this study consisted of a total of 45 swimmers (25 cadets and 20 junior) from 3 swimming club from Split (PK "Grdelin" PK "Sailor" and PK "Jadran"). All participants completed a questionnaire modified SEFIP.

The respondents for each of the 15 parts of the body (neck, shoulder, elbow, wrist, fingers on the hand, upper back, lower back, hips, thighs front upper leg back, knee, lower leg front, back lower leg, ankle and foot) mark about the pain in a certain part of that level of pain (to the left and to the right).

The incidence is assessed offered answers to Likert scale according to the following numbers: 0 - do not hurt me; 1 - a little pain; 2 - quite hurts, but I practice; 3 - very bad, so I avoid certain movements; 4 - I cannot even train because of the pain. Topology pain evaluate the scale - "there is pain", or, "no pain" (marked with 0 or 1) in a particular region of the body.

T-test for independent samples we examined the significance of differences between the cadets and junior swimmers due to their age, body height, weight, years of training and weekly hours of training. Chi-square test analyzed the significance of differences in the frequency of pain in certain parts of the body between the cadets and junior swimmers.

Results and discussion

Table 1 shows the basic features of swimmers junior and cadets involved in the study and significance of differences (p) of the same.

Table 1. Basic features of junior and cadet swimmers

	Age	Body height	Body weight	Years of training	Hours of training/ per week
Cadets N=25	12,560	161,840	47,960	5,8	12,960
Juniors N=20	16,000	178,350	67,950	8,4	14,925
Significance (p)	0,000	0,000	0,000	0,000	0,068

After an examination of Table 1, we can conclude that among the respondents swimmers junior and cadets are no statistically significant differences in age, body height, body weight and years of

training, but not in the number of hours of training per week. Given the fact that the swimmers juniors significantly taller and heavier and significantly longer training of cadets, when interpreting the results we must accept this fact. Table 2 shows the topology of the pain and the significance of differences in the incidence of pain between two selected groups of young swimmers.

Table 2. Topology of pain and significance of differences in the incidence of pain

Pain location	Cadets (%)	Juniors (%)	Frequency differences (p)
NECK	16	45	0,158
SHOULDER	48	40	0,185
ELBOW	12	25	0,564
WRIST	8	15	0,001
FINGERS	0	5	/
UPPER BACK	36	30	0,322
LOWER BACK	32	70	0,660
HIP	8	0	/
THIGH (FRONT)	16	15	0,897
THIGH (BACK)	16	15	0,032
KNEE	52	40	0,003
LOWER LEG (FRONT)	24	15	0,710
LOWER LEG (BACK)	16	40	0,081
ANKLE JOINT	20	20	0,042
FOOT	16	20	0,079

Looking at Table 2, we can conclude that the most common sites of pain in swimmers cadets: shoulder (48%), upper (36%) and lower back (32%) and knee (52%). Since training with cadets are not yet so intense, we can assume that the occurrences shoulder pain a result of frequent movement, taking into account the fact that the shoulder and rotator cuff rim vulnerable to frequent stimuli. So Cave (2001) in his work gives an example swimmer only during a workout done about 4000 strokes, which amounts to more than 800,000 strokes in a single season (so it is not surprising that about 60% of top swimmers have problems in terms of overuse injuries in the shoulder area). Pain in the back and knees in turn may be the result of growth and development, or non-specific training. Some authors (Cave, 2001, Đapić et al., 2001) indicate that the minimum anatomical variations and some biomechanical abnormalities of the lower extremities, especially if they are associated with errors in training and/or other external predisposing factors, resulting in the formation of overuse injuries to the lower extremity and / or spine. There are also studies (Becker, 1986) indicating the occurrence of structural scoliosis in young swimmers Delfinas, and which occur with repeated flexion of the spine, as well as due to muscle imbalance front and back muscle groups.

Furthermore, knee pain may be associated with chest technique, which produces because of the position of the joint. It is believed that the cause of the symptoms enthesitis median collateral ligament on the medial epicondyle of the femur perch, and often occurs bilaterally (Cave, Bojanić, Hašpl, 2001). Unlike cadets, juniors most often felt pain in the neck (45%), shoulder (40%, which is less than the cadets), slightly more in the lower back (70%), and in the knee and the list (40%). These percentages are expected due to the long and intense workouts, but reported pain in the lower back is not negligible. From Table 1 it is evident that there is a sudden increase in the training load as far as the weekly number of hours of training, but it can be assumed that these hours of training increased due to additional training on land (weightlifting, running, jumping, etc.). Shoulder pain can also be attributed to the overuse syndrome, which is the sport of this kind inevitably (a large number of repetitions of the same movement).

Furthermore, this syndrome can be attributed to the pain in the neck. The logical explanation for this phenomenon would be a specific breathing in swimming, with the head frequently rotated sideways at crawl technique, which can cause the same. Also, when used with the butterfly head to the inspiratory lifted up and forward, which creates additional stress on the neck muscles. The cause of pain in the lower back and knee would be the same as in swimmers cadets, while the pain in the list probably occurs due to shortened muscles that often cause spasm, but due to lack of time devoted to stretching. Table 2 also shows the significance of differences in the incidence of pain between the two groups of respondents. There are significant differences in pain wrist, back of the thigh and knee, and hock, but due to soreness at these places is not frequent onset, in a group of swimmers, we will not dwell on it. We will mention only the fact that these phenomena are common in football players, basketball players, runners and other young athletes who are engaged in similar sports, according to the Frisch et al; 2009, and that in such sports can lead to repetitive microtrauma.

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Conclusion

Looking at the results of swimmers cadets, we can emphasize the biggest amount of pain in the shoulders, upper and lower back, and knees. When junior is also present shoulder pain, lower back and knee, but in addition we find the occurrence of pain in the neck and Journal. Clearly, the more intense and exhausting training in junior age affect the difference in the frequency of pain in certain topological regions of the body. However, certain preventive methods and systematic and programmed training load should be to contribute to the reduction of these problems in the youth, especially in the cadet age. In doing so, we must not ignore the standardized methods to assess damage and the cause of the existence of overuse injuries because they can be very helpful professional staff, as well as the athletes themselves. This means recognizing the first signs of damage to the musculoskeletal system, to which most often occurs as a result of overtraining. It is essential to stop such state in the beginning. Children are not "little people" and have unique scalability and differ from adults to structures that allow growth and development, such as the growth plate, the epiphysis and apophysis on these sensitive cartilaginous structures usually appear overuse syndromes (Đapić et al., 2001). The implementation of stretching and strengthening the muscles in training is necessary. Special attention should be given to the mobility increase and stability of the shoulder, and spine. You should also find time for stretching and relaxing muscles (particularly those of the rear loggia; and to list). It is necessary to avoid sudden increase in the intensity of training without a good level of acquired swimming technique, because as such can lead to injury. In conclusion, regular reviews and opinions, and filling out the questionnaire as SEFIP and other similar, in order to have a more efficient implementation of prevention program. In this regard, an important role is played by the trainers themselves. Maximize the potential of young athletes in the sports performance integration of a number of factors, of which we cannot ignore the diagnosis.

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TOPOLOŠKE REGIJE I UČESTALOST BOLI KOD MLADIH PLIVAČA

Sažetak

Glavni cilj ovog istraživanja bio je identificirati učestalost i topologiju boli kod 45 mladih plivača; i to kadeta ($N = 25$, prosječna dob = 12,56) i juniora ($N = 20$, prosječna dob = 16,00). Svi plivači ispunili su modificirani SEFIP upitnik. Morali su označiti (za svaki zadani dio tijela) zapaženu bol i intenzitet iste. Za analizu podataka korišteni su T-test i Bartlett-ov test. Rezultati ovog istraživanja doveli su do zaključka da kadeti često osjećaju bol u ramenu, gornjem i donjem dijelu leđa i koljenu, dok su juniori također osjećali bol u ramenu i donjem dijelu leđa, ali i u vratu, koljenu i listu. Možemo pretpostaviti da su ovi rezultati dobiveni zbog većeg trenažnog opterećenja u juniorskoj dobi (nebitno radi li se o većem broju trenažnih jedinica ili o intenzitetu treninga). Može se preporučiti tijekom trenažnog procesa obratiti više pozornosti na zagrijavanje i istezanje (prije i nakon apliciranog treninga).

Ključne riječi: Mladi plivači, ozljede, SEFIP upitnik, Hi-kvadrat test

Received: March 02, 2016

Accepted: June 15, 2016

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