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Comparison of The Body Region And Intensity of Pain in Young Swimmers and Rowers

Karla Šitić Faculty of Kinesiology, University of Split, Republic of Croatia

Duje Dumanić Faculty of Kinesiology, University of Split, Republic of Croatia

ABSTRACT

The main goal of this research was to compare painfully regions of the body and the intensity of pain at 45 young swimmers (N = 45, average age =14,13) and rowers (N=43, average age = 15,42). All of the tested have filled out the modified SEFIP questionnaire. They had to mark (for every given part of the body) observed pain and the intensity of the same. For the data analysis T-test and Bartlett test were used. The results of this research have led to a conclusion that swimmers felt the pain in lower back, knee and shoulder, while young rowers had the lower back and knee pain, but also felt the same in the neck and the calf. Significantly differences in the intensity of pain were found in the shoulder, elbow, hand fingers, hip and the feet. Obtained results are own to the specific load at every given training session. It can be recommended to pay the attention on the warming-up, strenghtening and stretching the muscles through the season.

KEYWORDS : Young athletes, swimming, rowing, pain intensity, SEFIP questionnaire

INTRODUCTION

Today, an enormous number of children and adolescents is involved in many sport activities and semi-professional and professional sport (Đapic, Antičević, Capin, 2001).

Swimmers usually start training at an early stage, before their musculoskeletal system has matured. If the progress of the young swimmer is too fast or if it is not systematically monitored there is a potential risk of injury. It is necessary to understand the legality of underdeveloped musculoskeletal system. During the preadolescence, bony skeleton is subjected to the rapid growth, which is a factor particularly important for the possibility of injury. There are injuries caused by acute trauma and those that are the result of repeated stress or "overuse". The latter presents 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). Although rowing is a sport activity with a low incidence of injury, chronic damage in rowing attract the attention of the general public (Smoljanović, 2008). It is important to distinguish between injury and damage. The main feature of the injury is an acute occurrence. The damage is more likely to have a chronic character. Impairment is considered to be the pathological-anatomical substrate that anamnesis can prove and which a professional athlete or amateur usually do not feel, or can not remember the time when the damage occurs (Mišković, 2011). Overuse injuries occur when there is an accumulated micro-traumas (Smoljanović,2008).

Considering all these facts, it is clear that more attention should be given to work with beginners. We have to pay attention on injury prevention and removal of the possibility of the risk of pain in young athletes. SEFIP (Self-Estimated Functional Inability because of Pain), which has been used on a sample of dancers, volleyball and handball players, has also been used in this study.

OBJECTS

The main objective of this research was to identify the body regions and the strength of pain in young swimmers and young rowers. The target was also to see whether there are statistically significant differences for the mentioned.

METHODS

The sample in this study consisted of a total number of 45 young swimmers and 43 young rowers. Athletes are competitors in the categories of cadets and juniors. They are a members of three swimming clubs and two rowing clubs from the city of Split.

All participants have filled out a modified questionnaire SEFIP. The respondents have marked for the appeared pain in a certain region for each of the 15 parts of the body (neck, shoulder, elbow, wrist, fingers on the hand, upper back, lower back, hip, front and back thigh, knee, front of the lower leg, calf, ankle and foot). Strength has been assessed with offered answers on the Likert scale; 0; little pain, 5; huge pain. Location of pain has been evaluated with the scale - "there is pain", or, "there is no pain" (marked with 0 or 1) in a particular region.

T-test for independent samples was used to identify the significance of differences between swimmers and rowers; regarding to their age, body height, weight, years of training and weekly hours of training. We also used Chi-square test to analyze the significance of differences within the of pain in certain parts of the body between the swimmers and rowers.

RESULTS AND DISCUSSION

Table 1 shows the basic information of swimmers and rowers included in this study and the significance of differences (p) of the same.

Table 1. Basic characteristics of the sample (mean value) and the significance of differences obtained by t-test for independent samples

	AGE	BODY HEIGHT	BODY MASS	AGE OF TRAINING	HRS OF TRAINING/ WEEK
SWIMMERS N=45	14,13	169,38	57,13	6,99	13,83
ROWERS N=43	15,42	178,84	67,16	2,64	8,97
Significance (p)	0,000	0,000	0,000	0,000	0,000

In Table 1 we see that there are statistically significant differences in measured variables within the group of respondents, but it shouldn't take an important impact on the following. .

Table 2 shows the regions of pain and percentage of manifested pain in certain groups of respondents, significant difference between the percentage of pain between the two groups obtained with the T-test for independent samples and the significance of pain intensity obtained with chi-square test.

Table 2. Regions of the pain (percentage in manifested pain) within swimmers and rowers and significance of differences in body regions and intensity of pain given by Chi-square test

BODY REGION	SWIMMERS (%)	ROWERS (%)	SIGNIFICANT DIFFERENCE IN BODY REGION (p)	SIGNIFICANT DIFFERENCE OF PAIN (p)
NECK	31,11	53,49	0,034	0,540
SHOULDER	42,22	20,93	0,032	0,000
ELBOW	17,78	6,98	0,129	0,000
WRIST	11,11	32,56	0,014	0,919
HAND FINGERS	2,22	06,98	0,290	0,000

UPPER BACK	33,33	51,16	0,092	0,845
LOWER BACK	48,89	74,42	0,014	0,746
HIP	4,44	6,98	0,613	0,000
THIGH (FRONT)	17,78	20,93	0,712	0,312
THIGH (BACK)	15,56	18,60	0,708	0,963
KNEE	44,44	55,81	0,292	0,412
LOWER LEG (FRONT)	17,78	16,28	0,854	0,297
LOWER LEG (BACK)	26,67	51,16	0,018	0,185
ANCKLE	20,00	20,93	0,915	0,872
FOOT	17,78	23,26	0,530	0,001

In Table 2. it can be seen that the most common sites of pain in swimmers are: the lower back (48%), knee (44%) and shoulder (42%). We can assume that the occurrences in shoulder pain is a result of frequent movement, taking into account the fact that the shoulder and rotator cuff are sensitive to the repeated movement (swimmer's shoulder). Pećina (2001) in his work gives an example of swimmers who do about 4000 strokes during one training, which is more than 800,000 strokes in a single season. Back pain and knee pain might be the result of growth and development, or even non-specific training. Some authors (Pećina, 2001, Đapic, Bojanić, Hašpl, 2001) point to the fact that the minimum of anatomical variations and some biomechanical abnormalities of the lower extremities can result in overuse injuries of the lower limb and spine. There are also studies (Becker, 1986) which indicate the occurrence of structural scoliosis in young butterfly swimmers which occur with repeated flexion of the spine. Knee pain can be associated with breaststroke technique, which is due to the position of the joint. It is believed that the cause of the symptoms of median collateral ligament enthesitis on the medial epicondyle of the femur and often occurs bilaterally (Pećina et al., 2001).

Rowers often felt pain in the lower back (70%), knee (55%), neck (53%), the back of the lower leg and upper back (51%). These percentages are expected due to the long and intense workouts. Symptoms might be due to large training loads. It could be a pain resulting from specific sitting position in rowing training. Over 70% of strokes happens in flexion. Referenced is important because it was observed that the ring tensile force on intervertebral disk greatly increases the flexion above 50% of maximum, and the combination of flexion and compressive load is identified as a cause of damage to the lumbal spine (Smoljanović, 2008). Knee injuries in rowers can be attributed to acute injuries during non-specific activity in training (running, gym, etc.). Furthermore, pain in the wrist (32%) probably is due to frequent rotation ankle during training on the water, where we manipulate the paddle on the way that we do the dorsal flexion at the end of the stroke.

Table 2 shows the significance of differences in the regions of pain in the following regions: the shoulder, elbow, fingers of the hand, hip, foot. Given the fact that we investigated a group of swimmers, it is clear that compared to other athletes (rowers) they have a significantly higher intensity of shoulder pain. Rowers will probably have a higher intensity of pain in wrist due to the specific position of the palm, and also the fingers of a hand. However, percentage of mentioned pain is low in these groups of respondents so it will not be given much attention.

CONCLUSION

Looking at the results of swimmers, we can point out the most frequent pain in the lower back, knees and shoulders. Rowers had a pain in the lower back, knee and neck, and the back of the lower leg and upper back. However, certain preventive methods and systematic and programmed training load should be contributed to reducing these problems. Intense and exhausting training affect the intensity of pain in topological regions of the body specific for swimming (shoulder) and rowing (lower back, wrist). We shouldn't ignore the standardized methods to assess damage and the cause of the existence of overuse injuries. This stands for recognizing the first signs of damage of the musculoskeletal system, to which most often occurs as a result of overtraining. So, warming-up, stretching and strengthening of the muscles in each session is an inevitably thing. Special attention should be paid to increasing mobility and stability of the shoulders and spine in swimmers, and stretching and relaxation of muscles (particularly those of the back and lower extremities for rowers). It is necessary to avoid sudden increase in the intensity of training without a good level of acquired techniques, because as such can lead to injury. In conclusion, SEFIP and other similar questionnaire is in order to have a more efficient implementation of prevention. It should be emphasized that the most important role have the coaches. In conclusion, well-timed diagnosis is one of many determining factors to obtain the maximum potential of young athletes in sports performance.

LITERATURE

1. Becker, T.J. (1986). Scoliosis in swimmers. *Clin.Sport.Med*; 5(1):193-246.
2. Đapić, T., Antičević, D., Ćapin, T. (2001). Sindromi prenaprezanja u djece i adolescenata. *Klinika za ortopediju Medicinskog fakulteta Sveučilišta u Zagrebu, KBC Zagreb*.
3. Mišković, D. (2011). Ozljede u sportu. *Klinika za kirurgiju KB Merkur; Medicinski fakultet*. Zagreb.
4. Pećina, M. (2001). Overuse injuries of the musculoskeletal system. *Arh.Hig.Rada.Toksikol*. 2001;52:383-392. Prikazano na Simpoziju "Sindromi prenaprezanja sustava za kretanje u radu i sportu", Zagreb.
5. Pećina, M., Bojanić, I., Hašpl, M. (2001). Sindrom prenaprezanja u području koljena. *Klinika za ortopediju Medicinskog fakulteta Sveučilimta u Zagrebu, KBC Zagreb. Arh.Hig.Rada.Toksikol. 2001;52:429-439*.
6. Smoljanović, T. (2008). Pojavnost ozljeda i oštećenja sustava za kretanje vrhuskih veslača. *Disertacija*: Zagreb.
7. Stager, J.M., Tanner, D.A., (2005). Handbook of Sports Medicine and Science, Swimming. *2nd Edition. Department of Kinesiology, Indiana University*.