



Comparison of The Frequency of Pain in Competitive Junior Swimmers And Rowers

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ABSTRACT

The main goal of this research was to compare the frequency of pain within the group of competitive junior swimmers and rowers (N=54, average age = 15,87). All of the tested have filled out the modified SEFIP questionnaire. They had to mark (for every given part of the body) observed frequency of pain. For the data analysis T-test and Bartlett test were used. The results of this research have led to a conclusion that swimmers frequently felt pain in lower back, knee and shoulder, while young rowers had the lower back and knee pain more often. 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, strengthening and stretching the muscles through the season.

KEYWORDS

Comparation, swimming, rowing, pain frequency, 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, Čapin, 2001). Structurally, rowing motion belongs to a group of monocyclic sports, and by the prevailing, energy demands, it belongs to a group of aerobic sports (Marinović, 2002). Very high energy requirements are stated throughout the race. At the start of the race and at the very beginning of the regatta speed, intensity of the strokes reaches values greater than 700 W (70 kpm.s^{-1}), while these values during the race reach approximately 400 W (about 40 kpm.s^{-1}). Such a powerful strokes are to be carried out from 210 to 240 times in a period from 5.5 to 7 minutes, for which they need an aerobic capacities greater than $6.0 \text{ lO}_2.\text{m}^{-1}$. This complexity requires adequately balanced program of development of strength and endurance with the omnipresent stroke technique, during longtime working (Marinović, Ižaković, 2002). Swimming is unique in that it provides upper and lower body strength and cardiovascular training, which is performed in a non weight bearing environment. However the highly repetitive motion of swimming may predispose overuse injury. To fully understand the mechanisms leading a swimmer to injury, a thorough knowledge of anatomy and stroke mechanics is essential (Pollard, Hernandez, 2004). Swimmers usually start training at an early age, 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 which 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 (Stager, Tanner, 2005). Although rowing is a sport activity with a low incidence of injury, chronic damage in rowing attracts the attention of the general public (Smoljanović, 2008). The majority of rowing injuries are overuse injuries due to an abrupt change in training volume, alterations in technique, or the type of boat rowed (Hosea, Hannafin, 2012). 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 does not feel, or can not remember the time when the damage occurred (Mišković, 2011). Overuse injuries occur when there is an accumulated micro-trauma (Smoljanović, 2008).

Today, aware of the above and eager to the sports results, we all invest a large amount of time and effort in the training process. Then a differentiation becomes the quality of a training: Better results are achieved by those who work "smarter", in which the process of development of sports form is better managed. If we want a good manage of the sports form, we need to know the individual characteristics of athletes and the sports legality of the process of training (Marinović, 2002). Considering all these facts, it is clear that more attention should be given to work with the beginners. We have to pay attention on injury prevention and avoid the possibility of the risk of injury 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 differences in the frequency of pain in young swimmers and young rowers.

METHODS

The sample in this study consisted of a total number of 20 young swimmers and 34 young rowers. Athletes are competitors in the categories of juniors. They are 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 the frequency of appeared pain in a certain region for each of the 15 parts of the body (neck, shoulder, elbow, wrist, hand fingers, upper back, lower back, hip, front and back thigh, knee, front of the lower leg, calf, ankle and the foot). It has been assessed with offered answers on the Likert scale; 0; low pain, 5; high pain. 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 frequency of pain in each part of the body between them.

RESULTS AND DISCUSSION

Table 1 shows basic information of swimmers and rowers in-

cluded 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=20	16,00	178,35	67,95	8,4	14,93
ROWERS N=34	15,79	179,62	68,68	2,91	9,25
Significance (p)	0,466	0,507	0,782	0,000	0,000

In Table 1 we can see that there are statistically significant differences within the variables; age of training and hours of training per week. These facts should be considered while interpreting the results. Table 2 shows manifested frequency of pain in certain group of respondents obtained with the T-test for independent samples and the significance of pain intensity obtained with Chi-square test.

Table 2. Manifested frequency of pain in certain body region within swimmers and rowers and significance of differences given by Chi-square test

BODY REGION	SWIMMERS	ROWERS	SIGNIFICANT DIFFERENCE OF THE FREQUENCY OF PAIN (p)
NECK	0,700	0,647	0,679
SHOULDER	0,650	0,235	0,002
ELBOW	0,400	0,059	0,000
WRIST	0,150	0,353	0,186
HAND FINGERS	0,050	0,147	0,000
UPPER BACK	0,650	0,765	0,459
LOWER BACK	1,200	1,324	0,648
HIP	0,000	0,118	/
THIGH (FRONT)	0,250	0,382	0,879
THIGH (BACK)	0,200	0,294	0,227
KNEE	0,550	1,030	0,030
LOWER LEG (FRONT)	0,300	0,324	0,834
LOWER LEG (BACK)	0,700	0,676	0,402
ANKLE	0,300	0,294	0,893
FOOT	0,250	0,235	0,612

In Table 2 it can be seen that the most common sites of pain in swimmers are: the lower back, the back of the lower leg, neck, upper back and the shoulder. Rowers had the pain in the lower back, knee, upper back, the back of the lower leg and the neck. These percentages in both of the groups are expected due to the long and intense workouts.

Table 2 also shows the significant differences in the frequency of pain given by Chi-square test in the following regions: the shoulder, elbow, hand fingers, and the knee. Given the fact that we investigated a group of swimmers, it is clear that compared to other athletes (rowers) they have a significantly more frequent pain in the shoulder. Shoulder pain can be attributed to the overuse syndrome, which is an inevitably phenomenon in this kind of sport (a large number of repetitions of the same movement; Šitić, Dumanić, 2016). The existence

of significant differences in the elbow explains the fact that the rowers compared to the other athletes rarely occur pain in that region of the body. On the other hand, they have a significant frequency of pain at the fingers of a hand (because of holding the handle of the ergometer or the handle of paddle). Also we see a statistically significant difference in the frequency of pain at the region of the knees. Knee injuries for rowers can be attributed to mainly acute injuries in non-specific movements (activities incorporated in rowing training, running, gym, etc.; Dumanić, Šitić, 2016).

CONCLUSION

Looking at the results of swimmers, we can point out the most frequent pain in the lower back, the back of the lower leg, neck, upper back and the shoulder. Rowers had a pain in the lower back, knee, upper back, the back of the lower leg and the neck. Intense and exhausting training affect the intensity of pain in topological regions of the body specific for swimming (shoulder) and rowing (lower back). However, statistically significant differences in the frequency of pain between them are found within the region of shoulder, elbow, hand fingers, and the knee. The differences are mostly due to the specificity of each training. In general, certain preventive methods and systematic and programmed training load should be contributed to reducing these problems. We shouldn't ignore the standardized methods to inhibit the 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. Special attention should be paid on warming up before each session, increasing mobility and stability of the shoulders and spine in swimmers, and stretching and relaxing the body (particularly the back and lower extremities for rowers). It is also necessary to strengthen the muscles, but to avoid sudden increase in the intensity of training without a good level of acquired technique. In conclusion, SEFIP and other similar questionnaires are in order to have an efficient implementation of prevention. It should be emphasized that the most important role in this have the coaches. All considered, prompt diagnosis is one of many determining factors to obtain the maximum potential of young athletes in sports performance.

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