

## **Post-Workout Recovery and Psychophysical Characteristics of Sportsmen**

**Igor Petruk**

International University of Economics and Humanities  
4 S. Demianchuk St., building 1  
Rivne 33000, Ukraine

### **Abstract**

**Purpose:** *To prove scientifically the necessity of using massage and functional music for shooters as the means of restoration program during the preparation time.*

**Methods:** *Analysis of scientific literature, questionnaires (SAM-Q), assessment of practical trial after a special work and statistical analysis.*

**Sample:** *A total of 30 subjects were recruited for the trial. All study participants were within the age range from 18 to 25 old. They were professional athletes of shooting who had more than 10 years of experience in sports.*

**Results:** *The combination of sports massage and well-designed music when compared to massage only or a control condition enhances the recovery of sportsmen according to SAM-Q (A - +23%, B - +18%, C - +10%). Also, according to a special practical trial ( with a recovery rate of shooters: A – 2 min., B – 2,6 min., C – 3 min.).*

**Conclusions:** *The combination of sports massage and functional music does make the process of sportsman recovery more effective. During the research we observed that the shooters had better results of massage and music. Obviously, the reason for this was individual psychological peculiarities and other personal features such as: emotional stability, introversion and adaptation to relaxation music of shooters.*

**Implications:** *Understanding the processes of the recovery of athletes can help to increase their sports endurance and improve their performance in sports.*

**Key words:** training, recuperative means, psychophysical features, fatigue, shooters.

### **Introduction**

Many sportsmen warn about the dangers of overtraining. I think that there is no such thing as overtraining, just under-recovering. The problem of sportsmen's capacity for the recovery plays an important role in the preparation of them for different types of sports in modern conditions. There is a lot of psychological and physical amount of work that has to be done by sportsmen which requires the introduction of highly effective and accessible modes of recovery. Especially their role becomes important at the end of micro cycles, when the fatigue growth but the sportsmen has to train for the following competitions. That is why it is necessary to prepare them effectively for those competitions. Therefore it is important to find the optimal ways of the recovery of sportsman's capacity after a long period of physical exercises. And, it is necessary to find their peculiar complex ways in the relation to a particular type of sport.

The analysis all of the mentioned literature and author's observations showed an insufficiency of attention to the application of recuperative means during the preparation of shooters for training and competitions. Scientific publications differ and do not show much attempt for a research of a complex recovery means for a different kind of sports and stages of annual training cycle (Бірюков, 2003; Зотов, 1987; Родионов, 1983; Vanderbilt, 2001). The application of sportsman restorative means is necessary because of that great amount of psychological and physical work which makes special capacities to decrease during the training and competition (Kellmann, 2002; Kenttä, 2002).

The application of recovery means showed how important the restorative methods during the training process (Волков, 1987).

Also, the effectiveness of complex means of recovery after intensive training depends on the personal features of the endurance in sportsman.

Shooting puts demand to the psychological and physical quality of sportsmen. Fulfillment of shot requires skills of micro movement coordination, differentiation, muscles effort, long monotonous state work of shooters, mane of starts, necessity of long conservation of attention, strong strain of nervous system (Пятков-Мельник, 2006).

Therefore, application of restorative means must be direct not only on the recovery of general working capacity but also on the restoration of psychophysical characteristics such as the emotional stability, static balance, coordination. This study aimed to proof scientifically the necessity of using massage and functional music for shooters as the means of restoration program during the preparation time.

### ***Methods***

During the research the following methods were used: analysis of scientific literature, questionnaires (SAM-Q), assessment of functional trial of recovery after a particular work and statistical analysis.

#### *Subject Recruitment and Research Design*

A total of 30 subjects were recruited for this trial. All study participants were within the age range of 18 to 25 years old. They were divided on the groups A, B and control group (C). All of them were the professional sportsmen with more than 10 years of experience in sports. The recovery means were realized during the recovery cycles twice a week (2012-2013). These were a massage and functional music (A) and just massage (B). The music was performed in a slow pace such as: largo, adagio, andante. The recovery means were not realized in the control group (C).

All subjects were given a written consent and asked to fill out the Self-sense, Activity, Mood Questionnaire (SAM-Q) before and after the appliance of recovery means.

The SAM-Q was served as self-administered questionnaire of a different self-assessment of fatigue. These were long-standard methods which were invented on the subjective approach and aimed to monitor emotional and functional conditions at the beginning and end of the research (Доскин, 1973).

#### *Trial assessment of sportsmen's recovery*

There were a special functional tests for strength and endurance of the dynamic and static regimen (20 lifts and holding of pistol for the period of one minute) before and after application of recovery means with a measurement of the pulse.

#### *Statistical analysis*

Descriptive statistics: mean, range, length of recovery in minutes, SAM-Q, the total score in percentage.

### ***Results and Discussions***

Our hypothesis is an implication of how to improve the performance and recovery by combining massage and functional music. And, our next task is to include this restorative program as an indication of recovery.

The performance of massage has in own specifics. It is very important if it is performed professionally (Бирюков, 2003). The massage itself is not just the series of a learned technique movements, it is much more than that. The effectiveness of massage involves neurological and emotional moments. In fact, the benefits of massage are more psychological than physiological (Grant, 2000; Hemmings & Smith & Graydon & Dyson, 2000; Hemmings, 2001). The speed of recovery after massage also depends on the psychological state of sportsman and his or her self-motivation (Петрук, 2007).

Music has a psycho-physiological effect. There was a scientific inquiry that revealed a psycho-physiological influence of music on the process of recovery by regulation of the arousal mechanism and acquisition of motor skills (Januszewski, 1997; Bacon & Myers & Karageorghis, 2008; Karageorghis & Jones & Stuart, 2008).

We examined the interactive effects of massage and music on the process of recovery of shooters by doing the questionnaire and estimating the pulse before and after the special functional trials (strength-endurance in the dynamic and static regimen).

According to the results of the research, the shooters after combining the massage and well-designed music the integral evaluation SAM got higher up to + 23% (5.11 points) in group A and + 18% (4.64 points) in group B. Also, according to the results of the research the integral evaluation SAM got higher up to +10% (4.31 points) in control group (C).

The author founds that the combination of massage and music, when compared to massage only or a control condition, enhanced recovery (see Table 1, Figure 1).

Also, before using the recovery processes in all groups we found the lower indexes of self-sense (S) and activity (A) compared with mood (M); after using the recovery processes the indexes mostly of S and A in compare with M showed much better results, especially in the groups A and B.

**Table1. The efficiency of recovery means during the training of shooters (points, %, recovering micro cycle)**

Groups		An integral estimation of the subjective state (SAM-Q)
A n=10	Before	3.93 p.
	After	5.11 p.
Efficiency		+23%
B n=10	Before	3.94 p.
	After	4.64 p.
Efficiency		+18%
C n=10	Before	3.92 p.
	After	4.31 p.
Efficiency		+10%

The recovery of pulse rate after a special functional trial of shooters showed better results (2 minutes) in group A. The recovery of pulse rate after a special functional trial showed results 2.6 minutes in group B and 3 minutes in group C.

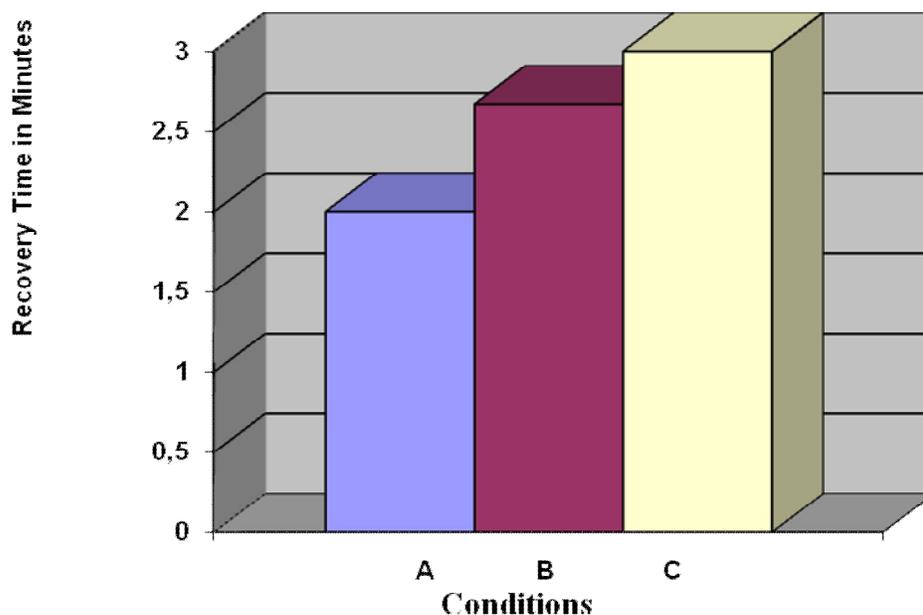


Figure1. Bar chart illustrating mean scores for the recovery under conditions of massage and functional music (A), of massage only (B) and a no massage/music control (C).

## Conclusions

- The analysis of scientific literature shows an insufficiency of publications about a complex of recovery used during the different stages of annual cycles of sportsmen's preparation.
- The combination of sports massage and functional music makes the process of the recovery for shooters more effective.
- During the research we observed that the shooters had better interactive effects of massage and music on the process of recovery. Obviously, the reason for this was individual psychological peculiarities and other personal features such as: emotional stability, introversion and adaptation to relaxation music of shooters.

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