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The Contribution of Fatigue to The Physical and Technical Improvement of Potential Young Athletes (Slompn) Training Center of Semarang State University

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Abstract

The purpose of this study was to analyze the contribution of athlete fatigue levels to the physical and technical improvement of UNNES Center student athletes. This research design is ex post facto with research subjects as many as 19 young athletes aged 13-15 years at the UNNES training center within a period of 7 months. The results showed that there was a variable influence of fatigue level on physical improvement by 72% and the lack of influence of fatigue level on sports technique showed an r value of 0.287. Conclusion Long-term training centers can improve physical quality and technique by being programmed to regulate fatigue levels as a result of exercise.

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INTRODUCTION

Coaching can take the form of centralization and decentralization, both of which form a synergistic impact on the development of athletes' potential. (Arrony &; Wismanadi, 2020). According to (Soegiyanto, 2011) the Centralized System of Sports coaching is suitable for sports achievements where the management system is monitored directly by the government through a small management system. In this case, many factors can be imposed in centralized coaching such as the provision of athlete nutrition, health, athlete conditions as well as expert personnel involved in centralized coaching. The success of coaching outstanding athletes is the result of complete cooperation from coaches, coaches and sports experts (Indrayana &; Setiawan, 2019). Coaching with a centralized system requires good management to be carried out smoothly according to the objectives. Sports management organizes potential sports resources in the form of quality inputs , manages work processes and evaluates results / outputs that are according to targets and objectives. Without controlling the quality, potential, resources and performance, it will be difficult to achieve the expected goals in optimal performance. (Fortunately Febrisius Soan, 2021)

The training center for young sportsmen in Semarang fosters student athletes aged 13 to 15 years from the beginning of their coaching through selection from each branch of Athletics, Weightlifting, Archery and Rock Climbing. This ensures that the quality of the athletes being nurtured is a major concern. In the implementation of centralization of the program that has been prepared by each coach, both physical and technical, is carried out individually with the initial start of each athlete's ability based on the results of initial tests. Training principles that pay attention to the individual needs of athletes are part of a tiered coaching process. (Love et al., 2020).

The implementation of training programs by student athletes will be periodically monitored development, especially in terms of technical development and physical development. A progressive training program, monitored by the trainer to get optimal results. The form of exercise is also adjusted to the principle of programmed and planned exercise, especially regarding FITT (Frequency, Intensity, Time, Type), namely the number of movements in the training session, the intensity of the exercise weight, the length of doing the exercise and the type of exercise programmed. Physical exercise programs that aim to improve physical quality with a specific purpose. Goals in physical exercise can be in the form of increasing strength (Haff &; Triplett, 2016), (Bompa &; Carrera, 2015), joint movement area (Mikolajec et al., 2012), (Suarti & Rohani, 2019), ideal body composition (Mulyadi, 2013) and other social goals. The ideal body increases self-confidence , favoring daily activities with dexterity and fitness. The opinion (Khotimah &; Nainggolan, 2019) that obesity will lower mentality, and self-confidence, Correspondingly Rohrer states that weight loss will increase one's self-confidence (Rohrer et al., 2008). Self-confidence related to physical quality is also stated by Peter et.al (2016), namely that strength and weight are choices to increase confidence in oneself (Kvam &; Pleskac, 2016).

Negative impacts begin to appear when athlete fatigue levels accumulate. (and Eka Novita Indra, 2016), (Prasetyo et al., 2020). Physical fatigue is a decrease in physical quality and quantity as a result of continuous performance. Fatigue causes physical quality to decrease and has an impact on not achieving technical performance in sports. (Giriwijoyo, S., &; Sidik, 2009). This raises the question of whether this also happens to young athletes at the Semarang State University Center?

The purpose of this study was to analyze the contribution of athlete fatigue levels to the physical and technical improvement of student athletes at the center of UNNES.

METHODS

The method used in this study is a survey method with an ex post facto research design. Which is used to analyze and analyze the contribution of fatigue levels, to the physical and technical improvement of student athletes at the center of unnes. The research will be carried out in about 3 (three) months, from February to September 2023 with the object of research of potential Young Sports Training Center (SLOMPN) athletes totaling 19 young athletes with an age range of 13 to 15 years, at Semarang State University, at Sekaran Gunungpati Semarang Campus

Data analysis used using a quantitative approach whose data includes: (1) rechecking the data that has been collected; (2) Sort and analyze all tests to obtain accurate data. Data obtained to analyze and examine thecontribution of fatigue levels to the physical and technical improvement of UNNES Center student athletes. Processing of research data using the PLS (Partial Least Square) method which is a multivariate statistical

technique handling response variables and explanations that are not based on robust conditions which means, insensitivity or rigidity to small changes in assumptions.(Seheult et al., 1989).

RESULTS AND DISCUSSION

Training in long-term programs in SLOMPN Sentra Semarang is prepared programmatically and facilitated by the Ministry of Youth and Sports by taking into account the conditions, characteristics of athletes and scientific theoretical studies that support the development of training. A total of 19 young athletes were trained with the principle of specificity, namely special training in accordance with the characteristics of the sport with the profile in **Table 1.**

Table 1. Summary of Athletes' Body Mass Profile and Index

Value	Age (th)	TB (cm)	BB (kg)	IMT	N	Mean	Stdev
Min Boy'S	14	149	36	14.8	7	19,9	4.52
Max Boy'S	15	170	75	29.2			
Min Girl'S	11	149	36	15.4	12	19,8	3.24
Max Girl'S	15	170	75	29.2			

Once a month, the coaches of each branch and the physical trainers and supporters report on all activities and assess the progress of each athlete by assessing the various tests performed. This is to see the physical and technical improvement of all athletes as a form of programmed training. On the other hand, athletes accompanied by supporters from psychiatrists, nutritionists and medical experts regularly report their body conditions

into a system that has been created by big data experts. The collected data is recorded and analyzed monthly. The following is data on physical and technical values as well as fatigue levels that the author compiled from big data expert sources as follows in **Table 2.**

Based on **Table 2.** above, it can be concluded that the data are normally distributed and homogeneous, there are values of physical improvement and technical improvement that vary based on the condition of each potential young athlete from February to August 2023. Some athletes experience a decline in technical and physical scores, which is natural as they develop maturity at puberty and fatigue levels in following a long-term training program.

The finding in the form of an interesting phenomenon in this study is that there is a relationship between the level of fatigue and physical improvement. This is in line with the opinion (Caspersen et al., 2013) that planned and programmed exercise continuously will improve physical quality. According to (Parwata, 2015) stated that an athlete who conducts increased training will experience increased fatigue as well, so the athlete needs programmed recovery. in the form of light activity According to (Naczenski et al., 2017) that there is a strong negative relationship between the level of fatigue and physical activity, it is shown that light and pleasant physical activity will reduce fatigue. Because actually the level of fatigue has a strong impact on psychological pressure. Another finding was that there was a lack of association between fatigue levels and improved technique in SLOMPN athletes. This is considering that athletes who join the Semarang training center are teenage athletes who have not developed their sports techniques maturely. The level of fatigue shown in each exercise will reduce physical performance but technically the sport does not cause a significant effect.

CONCLUSION

Based on the results of analysis and discussion, then the conclusions that can be drawn from this research are;

There was a significant relationship between the level of fatigue and physical improvement of 0.87 in young athletes in Semarang Center.

The lack of relationship between the level of fatigue and the increase in sports technique by 0.287 in young athletes in Semarang Center which means that the level of fatigue has less influence on their sports technique in Semarang Center athletes

The contribution of fatigue level to physical improvement in young athletes in Semarang center as much as 72%. Which means the level of fatigue in the drill will support his physical improvement.

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Table 2. Summary Table of Physical and Technical Improvement Assessment Data and average fatigue levels

Assessment Items	N	Min	Max	Mean	Std. Deviation	NormalitasNilai Sig.	Homogenitas Nilai Sig.
Technical Value	19	-10.22	17.50	3.4553	7.6	0.253	0.202
Physical Value	19	-11.10	17.40	3.8211	8.1	0.722	0.179
Fatigue level value	19	3.00	9.00	5.8842	2.05	0.092	0.352

Table 3. Below is the relationship between fatigue levels and technical and physical improvement

Test Items	Variable	Result	.Sig	Information
Box's M		9.978	0.360	.sig.> 0.05. Ho. Accepted matrix of variance and covariance of the variable depend on the same can be further for the manova test
Pillai's Trace Wilks' Lambda Hotelling's Trace Roy's Largest Roo	Fatigue Level	F= 2.222 F=3.314 F= 4.557 F= 10.392	0.046 0.07 0.01 0.00	4 The type of test value .siq < 0.05 can be concluded there is a significant variable influence on the level of fatigue with the increase in physical and technical values
Levene's Test quality error Variance	Physical improvement Technical Improvement	F= 1.132 F=3.669	0.026 0.401	The value of sig< 0.05 means that there are different data variants A sig value < 0.05 means that there is the same data variance
General linier model Multivatiat (GLM) Fatigue level R (R square)	Physical improvement Technical Improvement Physical improvement Technical Improvement	F=8.939 F= 0.803 0.817 (0.726) 0.287 (-0.70)	0.01 0.586	A value of .sig< 0.05 means that there is a relationship between the level of fatigue and physical improvement while the increase teknik No significant relationship. Relationship strength by 72% Relationship strength as much (-0.7%)

Source : Researcher data processing

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