

Comparison of three methods to special tapering on some functional variables and Biochemistry to footballers Futsal young

AMEEN KHAZAL ABED
Assistant Professor
College of Physical Education
Thi-Qar University, Iraq

Abstract:

Theoretical background: *The process of Training loading taper leads to high functional and physical powers for the athletes in different games, there are many methods of tapering , the study aimed to compare the three methods are: a linear taper, the exponential taper, and step taper.*

Procedures: *The research sample included footballers Futsal youth, totaling 18 players, divided into three groups of 6 players each group, has been used with each one of the methods tapering.*

Results: *Group C progress the results of anaerobic powers on the rest of the groups, While Group B progress of the results of aerobic powers test on the aggregates rest.*

Conclusions: *The step tapering raises the level of anaerobic powers, but may adversely affect aerobic powers, because it is characterized by a significant tapering in the volume of the training, either the exponential taper worked to develop aerobic powers while retaining anaerobic powers well.*

Key words: tapering, biochemistry, footballers Futsal young

The main role of training specific phase for the competition is directing the training loading components fully, to meet competition requirements which will sports involve, include Training tapering to achieve one of the main goals of the

Platform for training program, namely the removal of the effects of fatigue for the athletes and ensure their access to state of adjustment, which means re full of energy stores, and there are several methods used Training tapering was the most prominent (a linear taper, the exponential taper, and step taper).

Several studies were unanimous that the Training tapering that comes after a period of high training loads back to sports viability and functional higher than during high aerobic powers and anaerobic, has indicated study **(Marttin & Anderson, 2000)** that there is an increase in the maximum heart rate after a follow-up period of 7 days from the tapering among cyclists, either study **(Jeakendrup, 1992)** has found that there is an increase of 3% in maximum heart rate after a period of tapering cyclists during a competitive effort.

The positive adjustment to tapering leads to a positive change in the blood and metabolism volume, and this works to increase in extraction O_2 , and One study suggests an increase in VO_2MAX up to 5% at tapering to the level of 50% **(Patrek& Donald, 2005)**, while the study **(Neary, 2003)** found an increase in VO_2MAX of seven athletes from cyclists with higher level and who kept the intensity training up to 85- 90% of VO_2MAX at tapering have 7 days.

A study **(Neary, 2003)** that there is an increase of 17% in muscle glycogen stored after 4 days of tapering and 25% increase after tapering, and the results came through the comparison between the three equal groups of cyclists during the tapering continued of 7 days.

Study **(Johns, 1992)** indicate that the power of swimmers using resistors in the water has improved by 13% after tapering, as noted a 5% increase in the level when using swimming with resistors after a period of 10-14 days tapering, and summarized the study **(Martin, 1994)** when an increase in the Femoris Rectus power of 8.9% after two weeks of tapering among a group of athletes, the study found that tapering for a

period of 21 days has led to an increase in the cross section of the muscle up to 24% in fiber type Ila with swimmers applicants after a period of tapering, as it was found that the fiber type Ila produced more fibers within the muscle, which gives more maximum power (**trappe2000**) and proved to be a period of 21 days from the tapering was enough to occurrence of a significant increase in maximum power and performance of the players rugby applicants by tapering training volume and maintain the intensity of high performance. (**James&Matt, 2014**)

This study aims to use three methods to tapering training loading to footballers Futsal young during 14 days to get to know the best tactics.

Procedures:

The research sample consisted of 18 players from the footballers Futsal young, were divided into three groups each group of 6 players.

Table 1: Shows the homogeneity of the sample

Variables	M	SD
Age / year	17.45	1.85
The length / cm	172.21	11.32
Mass / kg	65.70	5.41

After finished the setup for members of the sample and access to the tapering, the sample was divided into three groups underwent all group to different style in tapering, as it underwent the first group (**A**) to the style of a linear taper in the tapering , while underwent the second group (**B**) to the style of a Exponential taper , and underwent the third group (**C**) to the style of the step taper, and continued the tapering for 14 days, including two days rest, the number of training units that have been subjected members of the three groups of 12 training units, having been adopted style to maintain the

intensity of high-performance and training loading volume to reduce the difficulty of the training loadings, and Figure (1) illustrates the training loading curves for each group.

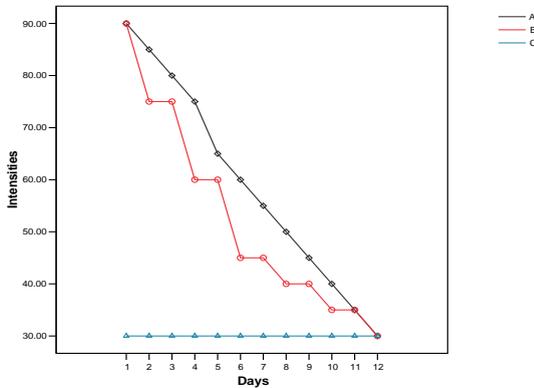


Figure (1) illustrates the training loading for three groups

It has been used aerobic power test to identify the VO_2 , VO_2 MAX levels and anaerobic power test to identify the levels of lactate and anaerobic threshold landmark to identify the differences in the values of these variables between pre-test and post-test.

Statistics:

T test was used for correlated samples to identify the differences between pre-test and post-test of the three groups A, B, C was also used ANOVA test of variance analysis to identify the differences between the three groups in the post-test.

The results:

It was turned out by the results of anaerobic power tests, and an increase in the values of all the variables which studied under the level of significance ($p < 0.05$) and all groups A, B, C, and the results indicate the level of development that the members of the group C were the most in the evolution rate of

the rest of the aggregates, shows through the results of variance analysis **Anova** that there are differences between groups in the post-test under the level of significance (**p <0.05**), and with respect to aerobic power tests have tested, **T** results showed an increase in the variable values of **VO2,VO2MAX** under the level of significance (**p <0.05**). The results point to the existence of differences between groups **A, B, C** in aerobic powers in the post-test, and the results indicate the level of development that members of Group **B** were the best in the aerobic powers.

Table 2: Shows the value in some functional variables and biochemistry between pre-test and post-test for the three groups

Variables	groups	pre-test	post-test	evolution %
HR Beats/min	A	184.6 (12.3)	188.1 (9.7)*	0,02
	B	183.2 (11.6)	189.7 (10.4)*	0,03
	C	183.5 (11.7)	191.2 (8.8)*	0,04
LA ml mol/L	A	7.4 (0.31)	8.1 (0.28)*	0,08
	B	7.6 (0.29)	8.3 (0.28)*	0,08
	C	7.5 (0.30)	8.5 (0.29)*	0,11
AT Beats/min	A	163 (16.4)	166 (12.6)*	0,01
	B	162 (14.6)	166.5 (11.1)*	0,02
	C	162.4 (15.7)	168.2 (13.2)*	0,03
EMG ml v/ms	A	230 (8.9)	244.8 (8.2)*	0,05
	B	235.3 (9.1)	252.7 (8.3)*	0,06
	C	233.5 (7.9)	260.8 (6.6)*	0,10

*P< 0.05, significantly different from tapering HR: maximal heart rate, LA: lactic acid, AT: anaerobic threshold, EMG: muscle electromyography.

Discussion:

The researcher attribute the moral differences that had showed in the results of the heart rate between pre-test and post-test for the three groups, to the growing functional powers of the heart resulting from athletic training, as structured training to raise the maximum heart rate works.

The maximum heart rate in athletes moving from point to the extreme another with the continuation of proper training, so estimates of the maximum rate of the heart in athletes is changing constantly as long as the athletes continuing in their training programs, and emphasizes one study, Tapering for two weeks led to an increase in the rate of top swimmers at heart (**Hopper 1999**).

The effects on the maximum heart rate may be coming from the expansion of blood volume and the level of depletion Catolaminac which happened because of the training phase high intensity and that preceded Tapering (**Mujika ,2004**) as a researcher believes that the growing muscle stored of energy sources during the period Tapering, as it may reduce the volume of the functional burden on the heart muscle, allowing an increase of the maximum limit for his work.

Regarding the moral differences that showed in the lactic acid test results, the researcher attributable cause it to increase muscle stored of glycogen during Tapering, and this is what led to the increase in the proportion of lactic acid in the post-test, and according to a study (**Neary 2000**) that the concentration of glycogen muscle after 4 days of Tapering and 25% increase after the tapering period.

As regards the sample distinguishing anaerobic test results (**AT**), these indicated the presence of moral differences between pre-test and post-test, attributable to the evolution of the factors that help to delay the increase lactic acid and the most important:

1. Increase the effectiveness of the antenna metabolism, which reduces the need to anaerobic metabolism.
2. Representation of lactic acid in the muscles working.
3. Spread of lactic acid during non-working muscle fibers.
4. Speed to get rid of lactic acid by heart, liver, and other muscle to face the configured speed. (**Abo Alola, 2003**)

The researcher attribute the differences that showed in the Planning Electric Muscles (**EEG**) results of the muscles (**EMG**)

of Femoris Rectus muscle to improve muscle work by increasing the strength and power resulting from the improvement in the work of the enzymes in the muscle fiber and increased neural efficiency and increase the mechanical and metabolic efficiency, according to a study (Martin, 1994) for Incidence increase in strength quadriceps amount of 8-9% after two weeks Tapering among cyclists, as indicated study (Johns, 1992) that the power of swimmers using resistors in the water has improved by 13% after Tapering.

Table 3: Shows the value (T) in some functional variables and biochemistry between pre-test and post-test for the three groups

Variables	groups	pre-test	post-test	Evolution %
VO2 ml/min	A	824.6 (76.8)	843.2 (70.7)*	0.02
	B	862.9 (80.40)	883.4 (74)*	0.06
	C	820.9 (74.6)	870 (72.4)*	0.05
VO2MAX ml/kg/min	A	48 (6.7)	51.2 (6.3)*	0.05
	B	48.5 (7.1)	53.2 (6.2)*	0.09
	C	48.4 (6.9)	52.9 (5.9)*	0.08

*P< 0.05, significantly different from tapering

VO2: volume oxygen, VO2max: maximal oxygen uptake

Regarding the results amount of consumption of oxygen per minute, the researcher attribute differences that showed between pre-test and post-test to improve the viability of muscle fibers on oxygen consumption by increasing the activity of enzymes oxidizing, and refers (Bahaa, 2000) that the reasons for increased oxygen consumption back to increase the activity of enzymes oxidized in mitochondria and increase muscle power for oxygen consumption and speed extracted from the blood.

The maximum oxygen consumption data indicate to the presence of moral differences between pre-test and post-test and totals three attribute researcher to an improvement in the mechanisms speed of extraction of oxygen by the working muscles, and the most important:

1-increase the blood distribution to the working muscles.

- 2-increase the effectiveness of enzymes oxidizing to food which stored in the cells.
- 3-The ability of muscle cells to absorb oxygen.
- 4-The speed of metabolism in the cells for energy production.

A study (**Neary,2003**) indicates to a significant increase in the maximum oxygen consumption in laboratory tests ranged from **(9.1-2.5%)** during the period of Tapering lasted 7 days after special training loading ranged severity between **(85-90%)** VO₂MAX.

The results indicate the presence of moral differences among the three groups in the post tests, attribute the researcher to differences in the results of the three groups by progress group **(h)** group of step taper on the rest of the aggregates in anaerobic power test results, except for the threshold distinguishing anaerobic variable, as it did not Elevate the differences to the level of morale, and attribute the researcher reason progress group **(c)** that the direct taper in the volume of training while maintaining the training intensity for the duration of the tapering, it gave the largest chance to the members of that group to heal better, and increase stored muscle of energy sources larger than the two remaining, and this What distinguishes itself in anaerobic powers test results.

The progress a step taper **(b)** on the two groups remaining in the values of the amount of oxygen consumer and maximum oxygen consumption, and the researcher attribute reason for this to be a significant drop in the volume training of the group **(c)** and making the members of group **B** (Exponential taper) excel them being have the larger volume of the training group, followed by the results **(a)** of the linear taper, which maintained a relatively high volume training, the researcher believes that this may have a negative impact on their access to adequate healing power.

Conclusions:

The method of a step taper in the training loaded was the best in anaerobic powers development, while the method of the Exponential taper in the best aerobic powers development.

REFERENCES

1. Abo Alola: fitness physiology, gairo, dar alfekr, 2003, 228-227.
2. Bahaa aldeen: sport physiology, gairo, dar alfekr, 2000, 94 .
3. Gregory & Nicolas: The effects of tapering on strength performance in trained athletes. International Journal of Sports Medicine.2006.45
4. Hooper SL, Mackinnon LT, Howard A 1999 Physiological and sychometric variables for monitoring recovery during tapering for major competition. Medical Science in Sport and Exercise 31:1205–1210
5. James de, Matt Brughelli ; The effect of tapering on power – force – velocity profiling and jump performance in professional rugby league players , journal of strength , 2014, dol 10-1519 .
6. Jeukenfrup AE, Hesselink MKC, Snyder AC et al Physiological changes in male competitive cyclists after two weeks of intensified training. International Journal of Sports Medicine, 1992 Oct;13(7):534-41
7. Johns RA, Houmard JA, Kobe RW et al Effects of taper on swim power, stroke distance and performance. Medical Science in Sport and Exercise, 1992 Oct;24(10):1141-6.
8. Martin DT, Scifres JC, Zimmerman SD, Wilkinson JG Effects of interval training on cycling performance and isokinetic leg strength. International Journal of Sports Medicine, 1994 Nov;15(8):485-91

9. Martin D, Anderson M Heart rate-perceived exertion relationship during training and taper. *Journal of Sports Medicine and Physical Fitness*, 2000 Sep;40(3):201-8.
10. Mujika I, Padilla S, Pyne D, Busso T Physiological changes associated with the pre-event taper in athletes. *Sports Medicine*, 2004 34(13):891–927
11. Neary JP, Martin TP, Quinney HA 2003a Effects of taper on endurance cycling capacity and single muscle fiber properties. *Medicine and Science in Sports and Exercise* 35(11):1875–1881.
12. Patrick N, Donald C, Yagesh N ; Muscle oxygenation trends after tapering in trained cyclists , *Dynamic medicine* , 2005 , 1-9 .