The Effect of Preparatory Massage (Pre- massage) on the Excretion of Lactate in to Blood for Soccer Players After Performance

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Abstract

Massage has a direct and an indirect effect on the physiological activities of the body, for it permits in a way or another to provide muscles with nutritive elements as well as it enables the elimination of metabolites, which affect badly by their turn the sportsman's physical state. Hence, it's necessary to help the sportsman excretes all metabolites, of which lactic acid (lactate) that weakens muscles, and try to reverse its effect.

According to our studies and observations during soccer outwork, coaches don't consider the importance of soccer players' pre-training in enhancing their performance. As a matter of fact, it was proved that preparatory massageis one of the efficient means of fostering the excretion of lactic acid into blood , which affects positively the player's performance.

Key Words: massage; Pre-massage ; Lactate ; Performance .

الملخص

التدليك يؤثر بشكل مباشر وغير مباشر على الوظائف الفسيولوجية للجسم فهو يساعد بشكل أو بآخر على عمليات تزويد العضلات بالمغذيات،وكذا عمليات التخلص من فضلات عمليات الأيض التي لها تأثير على الحالة البدنية للرياضيين بشكل سلبي ،ينجم عنه أداء أحسن، وفي محاولة منا لمساعدة الرياضيين على التخلص السريع من نوع من أنواع فضلات عمليات الأيض والذي هو حمض اللبن الذي يعد أحد أسباب التعب العضلي و توجيه عمله بشكل إيجابي أكثر.

وقد تبين لنا من خلال إطلاعنا وملاحظاتنا في تدريبات كرة القدم أن المدربين لا يولون اهتماما بما قبل حضور الرياضيين للحصص التدريبية من وسائل تساعدهم على تقديم مستويات أحسن ولم يعطوا الأهمية اللازمة للوصول باللاعبين إلى المستوى المطلوب ،ومن هنا برزت أهمية البحث في تجريب استخدام وسيلة من وسائل التحضير لبدأ الحصص التدريبية وهو التدليك القبلي ومعرفة مدى تأثيره في تطوير القدرة على طرح أحسن لحمض اللبن إلى الدم ومدى مساعدة ذلك على تقديم مستويات أفضل .
الكلمات المفتاحية: التدليك التمهيدي . حمض البن . لاعبي كرة القدم.

Introduction

Massage is one of the crucial means leading to raise the sportsman's physical and physiological performance either in terms of recovery or preparation. According to Doctor Faiz Mhanna, the importance of massage lays in clearing lactate build up in the muscle, which permits the latter to : -restore its vitality - provide it with strength – recover rapidly- improve physical performance- develop the sports man's physical capacities – rehabilitation after injury . Moreover, massage is a key factor in the sportsman's psychological preparation and an efficient means to overcome tiredness. (Abou Alla abedefatah and all .1989)

Throughout this issue, one may wonder about the role of massage in preparing the sports man deploy a physical effort with a better performance and how this effort can rapidly clear lactate ; for once a person performs a strenuous activity lactate levels increase and its use, too. However, the body , in this case, can't release it which leads to its concentration in muscles and in blood later on. (Callaghan, M. J. 1993).

Thus through applying a preparatory massage, we would like to clear this acid that slows down work and causes indirectly muscle soreness .For the concentration of lactate causes acidity in muscle tissue (lactate produces lactate ions, hydrogen ions and raises acidity) (Coudreuse, Jand all 2004).. Acidity increase hinders muscle contraction through preventing the release of calcium ions and its association with protonin , which is a protein component of the muscle that regulates its contraction). Above that, high acidity level itself slows down and even stops chemical reactions relating to glycogen and glucose aerobic pathway by thwarting enzymes work and undermining energy production. (enzymes are proteins permiting fast reactions). This is why patients having McArdle Disease and lacking phosfofructokinase enzyme(an

important enzyme in the glycogen hydrolysis operation) can't produce lactate and thus can't make a great physical effort.

The first hypothesis

a quantity of lactic acid release in the blood of football players is normal after physical exertion is normal without massage.

The second hypothesis

Pre-massage affects the amount of lactic acid secretion in the blood of football players after physical exertion by increasing the amount of lactic acid elimination.

The third hypothesis

pre-massage with olive oil affects the amount of lactic acid secretion in the blood of football players after physical exertion by increasing that amount of elimination,

1- Importance of the Study

Majorily, this research is about finding out the impact of preparatory massage on soccer players during outwork and how it can diminish muscle cramps , so as to improve the players' physical performance.

2- Objective of the Study

Mostly, the accumulation of lactate in muscles causes cramps and soreness that a soccer player feels during and after workout ,that is why we're making this field experience, aiming at

- Help soccer players to recover from cramps or diminish their pain .
- Find out about the efficiency of preparatory massage in the capacity of players to eliminate lactate during training .

- Guarantee the efficiency of the workout course and improve the players' performance ;
- Eliminate lactate rapidly and smoothly which paves the way to a better use of energy systems and a delay of anaerobic threshold process ;
- Find out a better product to perform an optimal massage ;
- Prevent and delay tiredness, and accelerate recovery .

Our major concern in this little paper is to answer the following question:

> Does preparatory massage for soccer players impact lactate excretion into blood after performing physical efforts?

Method used

Research and survey are important to reach scientific facts, but the method used is crucial, for it gives the researcher a better command of the phenomenon he's studying, except for the factors causing its alteration ; and we mean here the variants . It's necessary that the method be compatible with the idea focused on, that is why we applied the experimental method in this research to go with the issue we would like to treat.

3-1 Sample of Research

A sample is a part of an entity on which basis the study is done . In our case it's a club, representing the whole society ,which had been chosen through a random drawing. It's Nasr Hussein Dey Club (NAHD), gathering eight (08) players under 19 years old .

3-2 Field of Research

- **Place field** : we carried out this field study in the district of Algiers-center, and precisely on NAHD club , under 19 year-old category.
- **Time field** : this study was fulfilled along from January 2017 up to May 2017 on two stages :

• From January 2017 to March 2017 : regarding the exploration survey and the theoritical part , during which we consulted all references relating to our theme.

• April 2017 : regarding the practical part, where we carried out tests and fulfilled and interpreted data.

3- Tools of Research

Lactate analyzer (lactate pro 2), medical alcohol, cotton, chronometer, cones , a tape measure , training shirts, injections and a camera.

4- **Measurements**

We've carried out the following measurements : size/cm and weight/kg.
We've used a device to measure the rate of lactate, then we've proceded to enter the data within a computer programme to get the final output.

5- **Physical Exercise**

shuttle run exercise , also called doggies or yo-yo (210 m).

6-1 **Aim of the Exercise**

Measure the quantity of lactate produced.

6-2 : **Exercise Course**

• Exercise without massage : the player warms up during 10 minutes before doing the exercise.

- Exercise with massage : the player proceeds to a dry skin massage during 10 minutes, to a warming up during another 10 minutes before performing the exercise.
- Massage with olive oil : before doing the exercise, the player should warm up during 10 minutes after having a massage with olive oil for ten minutes.

The player stands before a thirty-meter length corridor, mark off 7 cones 5 meters apart in a single line, and starts running speedily after hearing the starting signal :

- ✓ From first to second cone , then back to the first one ;
- ✓ From first to third cone then back to the first one ;
- ✓ From first to fourth cone , then back to the first one ;
- ✓ From first to fifth cone , then back to the first one ;
- ✓ From first to sixth cone , then back to the first one ;
- ✓ From first to seventh cone , then back to the first one .

Rapidly, without stopping and by estimating the time spent. Once the player completes the exercise, he's given 3 minutes to recover. Just after that, we put a drop of the palyer's blood in the measuring device to get the exact amount of lactate.

We set up one minute difference between the first player's starting and the second one, so as to have time to get the result in 15 seconds. We do the same for the second player so that the measurements would be accurate and the results be fair .

Presentation and results analysis

N	Exercise without massage		Exercise with massage		Counted T	Tabled T	A	df	decision
8	- X	S	- X	S	-2.463	1.860	00.5	7	not mentionning
	11.33	1.835	14.98	2.949					

Table N° 01 demonstrating lactate measurement results of two shuttle exercises with and without massage.

According to table 01, displaying the results of both exercises with and without massage of the sample ; we got from the first exercise an arithmetic mean/average of 11.33 and a standard deviation of 1.835, while in the second exercise, we obtained an arithmetic mean of 14.98 and a standard deviation of 2.249 . Besides, the counted T was estimated to -

2.463,and this value is inferiorto that of the tabled T evaluated at 1.860 at a significance level of 0.05 and a7 degree of freedom. Hence, there is no statistical significance difference between the first and the second sample tests to measure lactate.

Arithmetic average ,without massage
Standard deviation, without massage
Arithmetic average ,with massage
Standard deviation, with massage

N	Exercise without massage		Exercise with massage		Counted T	Tabled T	a	df	decision
8	- X	S	- X	S	-1.727	1.860	0.05	7	Not mentionning
	11.33	1.835	14.74	4.453					

Table N° 02demonstrating lactate measurement results of two shuttle exercises with and without massage.

According to table 02, displaying the results of both tests with and without massage of the sample ; we got from the first test an arithmetic mean/average of 11.33 and a standard deviation of 1.835, while in the second test, we obtained an arithmetic mean of 14.74 and a standard deviation of 4.453 . Besides, the counted T was estimated to -1.727,and this value is smaller than that of the tabled T evaluated at 1.860 at a significance level 0.05 and a 7 degree of freedom. Hence, there is no statistical significance difference between the first and the second sample tests to measure lactate.

Arithmetic average ,without massage
Standard deviation, without massage
Arithmetic average ,with massage

Standard deviation, with massage

N	Exercise without massage		Exercise with massage		Counted T	Tabled T	a	df	decision
8	- X	S	- X	S	-0.207	1.860	0.05	7	Not mentionning
	14.98	2.949	14.74	4.453					

Table N° 03demonstrating lactate measurement results of two shuttle exercises with and without massage.

According to table 03, displaying the results of both tests with and without massage of the sample ; we got from the first test an arithmetic mean/average of 14.98 and a standard deviation of 2.949, while in the second test, we obtained an arithmetic mean of 14.74 and a standard deviation of 4.453 . Besides, the counted T was estimated to -0.207,and this value is smaller than that of the tabled T evaluated at 1.860 at a significance level 0.05 and a 7 degree of freedom. Hence, there is no statistical significance difference between the first and the second sample tests to measure lactate

Arithmetic average ,without massage
Standard deviation, without massage
Arithmetic average ,with massage
Standard deviation, with massage

Research Hypotheses

Refering to the theoritical and experimental data and according to the results obtained from the field study ,we discovered the impact of preparatory massage on the amount of lactate transfered into blood after deploying physical exercise by soccer players .
In our study, we stood on a general assumption and three sub-assumptions

First Asumption

This assumption indicates that the results are shown normal for the quantity of lactate found in players' blood after strenuous physical effort in case they didn't had massage.Through the presentation and the study of tables results relating to the first chapter , and going back to the results revealed in table 03 of the first exercise fulfilled without prior massage, we found the quantity of lactate the same for all players , compared to what was stated by Doctor huzae Muhammad al Huzae, in that the concentration of lactate in blood for players while depoying physical efforts is 22 mmol/L , and a bit more than that value when a strenuous physical effort is performed ; which is regarded a very high concentration of lactate in blood. Whereas, 2mmol/L is an inferirior value that indicates that effort is made below the anaerobic threshold , ie shifting to generate energy anaerobically , where the rate of lactate starts rising .

Thus, the first Assumptionwhere lactate rates are shown normal for players deploying a physical effort without having massage, was proven to be correct and authentic ; for all lactate values belong to the same scope stated by Doctor Hazae Muhammad Al Hazae.

Second Assumption

We suggested that massage stimulates more the concentration of lactate in blood after performing physical exercise , which is well mentionned in table 15 and through the graphs demonstrating the quantity of lactate produced during the three excercises from 1 to 8 , where this quantity raised compared to the initial value ; as reported by Doctor Tairi Abderrezzak in his book « Sports Massage » (through his study, he confirmed that the impact of massage on the production of urine and shuttling oxygen is around 10-15 % (Sarkizov Cerazette 1963) , besides the excretion of sweat which removes from the body minerals, some azote and lactic acid.According to the study fulfilled by P.S Valicivan , A.Volcovau and A.M wimtakaya(1961) on the impact of massage on the body after exertionin clearing rapidly lactic acid which oxides fastly in big passive(non working) muscles once massaged.

However, and despite the obtained results and the underlying assumption, Tstudent results opposed completely what has been mentioned ; for it showed that according the counted and the tabled values there was no statistical significance proving the accuracy of the second assumption, and thus its denial .

Third Assumption

It has been proven that lactate accumulated in blood at high rates after massage with olive oil, as shown in each player's special table compared to table 15and through the graphs as well, relating to secreted lactate during the three exercises from one to eight, hence consolidating the theory of Doctor Jameel Al-Qudsi Dweik in his book « Balanced Food » saying that massage using olive oil has a great impact in removing lactic acid , which improves sportsmen's performance.

After displaying and analyzing the tables results relating to the third chapter, We relealized that the third assumption can't be regarded true, what is reinforced in tables 16 and 17 where Tstudent results show that T_c is inferior to T_t.

Discussing Results According to the General Assumption

We treated in our study the link between the theoritical and the practical aspects, for through the experience we conducted and according to data analysis , we have found aclear difference between

players regarding test time and lactate produced quantity during the three exams.

Regarding the theoritical and practical data and according to the field study output, we realized the impact of preparatory massage on the accumulation of lactate in blood after trenuous exercise, basing on the general assumption.

And through analyzing a blood sample taken after exertion, we noticed the raising rate of lactate (through blood test, we can discover that acidification or anaerobic threshold can happen during exertion). There was a clear difference in lactate rate concentration for six players out of eight. And despite that, the general assumption didn't materialize ,standing on Tstudent statistic results, however, we have witnessed a clear difference in terms of performance time or lactate production, and this latter was in raise compared to the first exam. which we consider positive; for massage permitted the removal of lactate from the muscle and its transferto blood , according to the affirmation of specialists from Lotus Clinic for motor rehabilitation – Rouiba, Algeria.

We consolidate as well the declaration of Dr.Jameel Al-Qudsi Dweik in his book « Balanced Food »(massage using olive oil has a great impact in clearing lactic acid , which improves sportsmen's performance.).

We can say, standing on Tstudent statistic results , that the general assumption stating that preparatory massage has an impact on the quantity of lactate excretion into blood after deploying an effort, was denied.

General Deduction

It was deduced, on the basis of the statistical study and analysis of the obtained results , that massage doen't impact the quantity of lactate shuttled into blood . For both dry massage or olive oil massage, don't impact clearly the quantity of lactate produced, while general performance time turned positively for each exercise.

However, field results , got from proceeding and comparing the three exercises and measured using an analyzer , depicted on the contrary that both of dry and olive oil massage have a direct and a rising impact on the excretion of lactate into blood for the players.

Nontheless and besides massage sessions, it's obvious that leading an optimal life, ie respecting sleeping time and eating healthy food, favors the production of lactate and thus affects the player's good performance.

We noticed as well that the team members , who are under 19 years old and on whom our study was concluded, haven't the least idea about either pre or post-exercise massage and don't consider it important.

Conclusion

In our study and through the introduction we could define the impact of the preparatory massage on the production of lactate and its transfer to blood for soccer players after physical exertion . we focused on footbal since its the most popular sport in the world, and we selected a category below 19 years-old , because they're more fit and suit the type of study we're leading.

Our reserach doen't just consist in introducing massage and its role and impact on the sportsman, but it's a message adressed to people in charge of sport, coaches, sportsmen and all those who are interested in this field, to offer all potentials and means in order to make massage fruitful , to raise awareness around it, to enhance the sportsman's performance so asto be in the same rank as developed countries and even rival them in international forums. Hence, to reach a high level of performance and in order to be able to compete, the coach as well as the players should be committed to all preparation means and conditions during the training sessions.

We have tried to highlight , through this study, the crucial importance of preparatory massage to clear lactate which gives the sportsman more energy , a good physical capacity and better performance.

Finally , we have deduced that it's imperative that the coach stands firm in applying all training principles sothat to boost his players' performance , and should as well be apprised of current events and developments which may permit the realization of an efficient training programme.

We wish our study would be a benefic reference for all whom are involved in this field.

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