

Role of Warming-up in Promoting Athletes Health and Skills

Dr. Homoud M. Alanazi

Dean of Community College and Faculty of Sciences and Arts,
Northern Border University,
Turaif, Saudi Arabia.
E-mail: homoud448@hotmail.com

Abstract- Warming-up is considered to be as the main sport component for any sport training period, it is the basis for any athletes before performing any sport activity or competition. It was noted on most of sport coaches, that they do not give the required attention and following-up for players warming-up period, leaving warming-up exercises to fitness trainers to do it without any supervision. Performance of warming-up exercises should focus particularly on type of exercises, time duration and exact period of time to do before real training or competition. Consequently, the health target average level of heart pulses should be reached through warming-up exercises for the benefit of athlete in general, and for the score results of his participation in competitions in specific. Warming-up exercises if wasn't done properly, it will reflect badly on individual's health and on their achievements. Sports' warming-up gets large importance especially before athlete exercises that requires maximum efforts to be done in a small short period of time.

The purpose of this research is to highlight more on the importance of warming-up from all of its aspects, in order to reach the best health with the best performance. This research will focus also on the role of warming-up exercises for specific athletics games that have significant impact in developing physical skills for football players.

Index Terms- Warm-up, Athletes, Competitions, Health, Muscles.

1. INTRODUCTION

Sport activity that is offered in a training session aims to prepare individuals physically and psychology to be able to perform the main part required from them in the session properly and effectively. As this effort vary from person to other, the reason for this difference depends on muscle blood supply, facilitating movement of various joints and muscles in addition for good preparation of heart and psychological, therefore it is required first to organize training sessions, dividing it into sections, each section perform the basic required role in raising the efficiency and level of sports player to the targeted physical, psychological and technical level.

The considerable efforts that falls on the player's muscles to perform require the use of additional large quantity of oxygen which can be delivered in regulating breathing and increase its speed. Body adapts itself according to external conditions depending on player movements and efforts.

Therefore, it was important for the player to increase gradually the amount of efforts and performances to keep pace with the player internal organs[1]. Because energy of the body has limited functioning, the energy offered by individual should not exceed his maximum rate of efforts and energy, for the purpose of avoiding any health damages or stout. Human body should get enough preparation so as not to be surprised with efforts; this preparation should be commensurate with physical effort which the player will perform. Preparation through warming-up requires preparing the body before performing sport activity that is required in the period preceding the intensive movement during sports training.

Importance of this research comes from the point that warm-up is essential to improve performance level and consequently it affects the output athlete achievements.

The purpose of this research is to highlight more on the importance of warming-up from all of its aspects, in order to reach the best health with the best performance. This research will focus also on the role of warming-up exercises for specific athletics games that have significant impact in developing physical skills for football players.

2. PROBLEM DEFINITION

Warming-up is essential and play active role in preparing the player to perform his kinetic exercises in training. Player performance is improved when the muscles and organs of the body have taken ample amount of warm-up before the performance of train or the game[2]. Most of the trainers, especially in football, they use classical training for warming-up.

Researchers found that improvement in sport activity can be achieved using other sports events activities, particularly athletics field to warm up, considering it as a form of exercises and transactions that can lead to upgrade skills and physical level[3]. One of the tasks of this research is to clarify last mentioned idea.

3. DEFINING WARM UP

A warm up generally consists of a gradual increase in intensity in physical activity (a "pulse raiser"), joint mobility exercise, and stretching, followed by the activity. Warming up brings the body to a condition at which it safely responds to nerve signals for quick and efficient action.

For example, before running or playing an intensive sport, the athlete might slowly jog to warm their muscles and increase their heart rate. It is important that warm ups be specific to the activity, so that the muscles to be used are activated. The risks and benefits of combining stretching with warming up are disputed, although it is generally believed that warming up prepares the athlete both mentally and physically. In a meta-study of 32 high quality studies, about 4/5ths of the studies showed improvements in performance.

Warm-up programs can improve the strength of the knee muscle, which, in turn, may decrease injuries [4].

Warm-up is a process to prepare the body through exercises before doing sport activity. Scientists indicate that efforts over player muscles when doing physical activity requires the use of additional quantities of oxygen through respiration regulation and increasing metabolism speed [5].

Various body organs has to adapt itself according to surrounding external conditions which is related to player performance that requires the player to raise his efforts and movement gradually till he reaches the desired high degree of implementation and excel performances.

4. NEED FOR WARM-UP

When the player performs tough effort, his muscles ask for additional oxygen to be able of doing the effort, additional oxygen is comes through regulating and increasing speed of breathing and speed of blood circulation. Simultaneously, metabolism has to be increased to keep up with other body parts speed.

Therefore, player should increase his efforts gradually so as the body's internal organs function can keep pace with the player's effort and movement. Player must prepare his body's internal organs adequately to fit with the expected physical effort and to prevent from any threats of sport common injuries [9].

5. IMPORTANCE OF WARMING-UP

Warming-up aims to prepare individuals from different aspects: physically, physiologically and kinematic in an organized and gradual way so as the individual will be able to participate efficiently in the training or competition.

6. IMPORTANCE OF PHYSIOLOGICAL AND PHYSICAL WARM-UP

1. Making all the body organs integrate physiology with the training and competitions for the best contribution without injuries.
2. Preparing the body to be able to contribute efficiently in sport games.
3. Works to warm the muscles and increase blood supply to it. Muscle temperature in normal situations is 36°, whereas it temperature rise after activation to reach 38° and needs between 10 to 15 minutes warming-up to reach higher efficiency.
4. As a result of raising muscles temperature, warm-up works to increase contraction, diastole muscle. Also, when hemoglobin ability increases to carry more oxygen to muscles and increase response to metabolic processes, it will help to reduce lactic acid and blood flow, resulting of increasing gas exchange.
5. Warming-up works to improve blood circulation and to reduce risk of early muscle contraction.
6. Warming-up works to activate chemical reactions within the body where muscles get energy due to increased muscle temperature.
7. Warming-up works to increase muscle rubber due to blood saturation in high temperature, cold muscles is logging less blood and it is exposed more than warm muscles.
8. Warming-up reduces pulling strings that could happen to athlete after efforts of hard exercise. It strengthens ligaments and cartilage for more flexibility [6].
9. Warming-up is designed to hone the player's potential and strength it. It makes the joints of muscles flexible and protects it when performing transactions.
10. It reduces risk of player muscles ruptured or pulling or tendons or ligaments.
11. It helps to open blood vessels in muscles. It stretches tendons, ligaments and reduces injuries.
12. It speeds up heart rate pulses; improve ventilation, pulmonary and activation of oxidative processes.

7. IMPORTANCE OF KINESTHETIC WARMING-UP

1. Setup and configuration of special kinesthetic skills.
2. Reach the maximum power of reaction.
3. More efficient rhythm for kinesthetic performance.
4. Concentration and precision in performing skills.
5. Regulating movement and alignment.

6. Consistency between different muscle movements which results more quickly and accurate movement.

8. PSYCHOLOGICAL BENEFITS AND IMPORTANCE OF WARMING UP

1. Raising level of attention intensity and consistency in dynamic performances.
2. Reaching the best collection of positive emotional excitability to perform different movements during training and competition.
3. Psychological initialization prepares the player to hold the required training load through gaining self-confidence and avoiding expected effects pre-competition [7].

9. OBJECTIVES OF WARMING-UP

1. Alert different body's organs to function.
2. Grant different body muscles with the required flexibility, ease and efficient moves.
3. Increase heart pulses rate and amount of blood for every pulse.
4. Regulate and speed up respiration, as well as to speed up blood circulation.
5. Raising body muscle temperature.
6. Accessing maximum capacity to respond to any actions.
7. Positive emotional reaction for training practices and competitions.
8. Maximum psychology alert to participate in training or competition.

10. PSYCHOLOGICAL ASPECTS IN WARMING-UP

In recent years, it was noticed the increased attention by researchers and trainers in sports psychology as a natural result of its importance and influence on the athlete final results due to his participation in sport games.

Psychological preparation before the competition is considered to be as player psychological preparation for a short term. Usually, it is conducted two days before the competition starts for a period not exceeding weeks.

11. GENERAL AND PRIVATE WARMING-UP

General warming-up can be achieved through walking, running, jumping and some other physical exercises of flexibility and agility. It works as a comprehensive preparation of body organs, muscles and joints but it is not sufficient to qualify a player to participate in games or hard sections of training and performance.

Private warm-up prepares the player in different respects and makes him ready to share in sport activity or any competition. Warm-up is necessary before fitness training of speed, power and technical training that needs speed, muscle contraction, extension and moving joints to full range. Warming-up prepare muscles to counter sudden movements in performance of technical training where the athlete will be safe from sports injuries. Figure (1) shows different warm stretches to be used before exercises.



Fig. 1: Warm stretches before exercise

12. IMPACT OF WARM-UP ON PERFORMANCE FACTORS

Many researches indicate the relationship between warm-up and performance factors such as: speed, power, endurance [10]. Some of researches have shown that muscle strength increases after regular warm-up sessions that include physical movement of body organs, whereas some of other studies showed that artificial heating to muscles does not increase muscle output power. This result was supported with the idea that heat must ensure muscle to work, not just to increase temperature artificially. In addition, many studies have shown that increase body heat parts artificially won't improve stamina. It proves that topical cooling which lowers skin temperature may lead to better performance of working muscles. A reasonable interpretation is that cooling the body down will result in reducing surface distribution of circulation near the surface which will provide the muscle under the surface with required blood.

13. ELECTRONIC WARMING-UP

British scientists have indicated that increasing muscles temperature artificially is better than normal warm-up, they confirmed their opinions that sport runners and sport high-jump should wind themselves with electronic thermal blankets before the games start [12]. Researchers from University of Manchester Metropolitan Subway explained that athlete muscle strength increases in between 8% and 10% for each rising in temperature of one degree. The scientist "Anthony Sargent" has explained to magazine "New Scientist", that increasing muscles temperature artificially is better than natural warming-up, because muscle temperature will be raised without suffering from exhaustion.

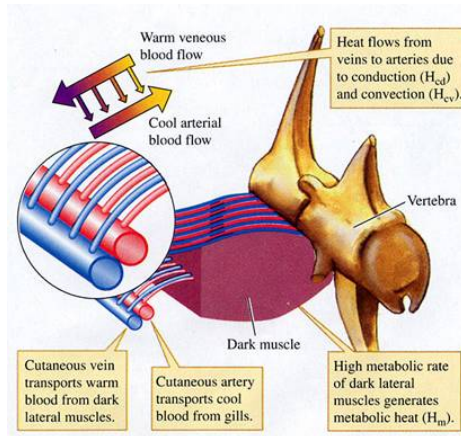


Fig.2.: Temperature relations.

14. WARM-UP TIME:

Experts preferred that warm-up time should be as half as the allocated time for training, where the duration of warming-up will be enough to get best results in competitions not to lead to exhaustion and fatigue before competition. The period between warming-up and start of the competition should be between 3 to 5 minutes. Best warm-up that takes less time and allow athletes to recover from temporary fatigue without losing effects of warm-up. Warm-up must work to raise body temperature from 1 to 2 degrees only.

Factors that affect length period of warming-up time:

a. Permanent factors such as:

1. Player: sex, age, academic level.
2. Trainee status level: physical, psychological, artistic,.
3. Stages of season: preparing period, period of competitions, transition period.
4. Circumstances surrounding player: transport media, nature of the work, daily player rhythm, clothing and footwear used by the player.

b. External Factors:

1. Weather status: low air temperature requires more time for warming-up and vice versa.
2. Time of training: in the morning, afternoon or evening. (In the morning requires more time for warming-up than others)

15. EFFECT OF WARMING-UP IN DEVELOPING FOOTBALL PLAYERS SKILLS

Many researches and studies proved that warming-up exercises for specific athletics games have significant impact in developing physical skills for football players. Recommendations were extended to use warm-up exercises for athletics to develop physical skills for football players.

16. CONCLUSION

Warm ups are important in all aspects of life. In our field of study, scientists have proved its significance to athletes that cover different parts and organs in their body, the future is promised to discover more of its significance to athlete body. Over all, it's important for us as human because it gives us healthy and happy life.

REFERENCES

- [1] Fradkin AJ, Zazryn TR, Smoliga JM (2010). "Effects of warming-up on physical performance: a systematic review with meta-analysis". *Journal of Strength and Conditioning Research*
- [2] Andzel, WD. The effects of moderate prior exercise and various rest intervals upon cardiorespiratory endurance performance. *J Sports Med Phys Fitness* 18: 245-252, 1978.
- [3] Andzel, WD and Gutin, B. Prior exercise and endurance performance: A test of the mobilization hypothesis. *Res Q* 47: 269-276, 1976.
- [4] Bourne, G. The physiological basis of the warm-up. *Mod Athlete Coach* 30: 36-38, 1992.
- [5] Hedrick, A. Physiological responses to warm-up. *J Strength Cond Res* 14: 25-27, 1992.
- [6] McMillian, DJ, Moore, JH, Halter, BS, and Taylor, DC. Dynamic vs. static-stretching warm-up: The effect on power and agility performance. *J Strength Cond Res* 20: 492-499, 2006.
- [7] O'Brien, B, Payne, W, Gastin, P, and Bürge, C. A comparison of active and passive warm ups on energy system contribution and performance in moderate heat. *Aust J Sri Med Sport* 29: 106-109, 1997.
- [8] Rochelle, RH, Skubic, V, and Michael, ED. Performance as affected by incentive and preliminary warm-up. *Res Q* 31: 499-504, 1960.
- [9] Safran, MR, Seaber, AV, and Garrett, WE. Warm-up and muscular injury prevention-an update. *Sports Med* 8: 239-249, 1989.
- [10] Skubic, V and Hodgkins, J. Effect of warm-up activities on speed, strength, and accuracy. *Res Q* 28: 147-152, 1957.
- [11] Smith, CA. The warm-up procedure: To stretch or not to stretch. A brief review. *J Orthop Sports Phys Ther* 19: 12-17, 2004.
- [12] Thompson, H. Effect of warm-up upon physical performance in selected activities. *Res Q* 29: 231-246, 1958.

AUTHORS

Dr. Homoud M. Alenazi – Ph.D, Northern Border University, Saudi Arabia, homoud448@hotmail.com.

Correspondence Author – Dr. Homoud M. Alenazi, homoud448@hotmail.com.