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EFFECT OF DIFFERENT WARMING-UP PROTOCOLS ON SELECTED SKILL PARAMETERS OF SOCCER PLAYERS

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ABSTRACT

Purpose: *The study aims to access the effects of different warming up protocols on selected skill parameters of soccer players.*

Method: *Twenty male soccer players were randomly selected for the purpose of this study. The subjects had their regular training in physical activities as part of their routine programme. The subjects conducted four warm-ups programs (5-mins warm up in ist week, 10-mins warm up in second week, 15-mins warm up in third week and 20-mins warm up in fourth week) respectively, after successfully completing the warm up data were collected immediately on selected skill parameters. The criterion measures, selected for the purpose of the study were kicking accuracy and kicking for distance.in addition to this J T finnoff's test for kicking accuracy and G H Warner's test of kicking for distance was employed. The data pertaining to the selected skill parameters of soccer players were examined statically by repeated measure one way ANOVA test through (SPSS Statistical Package for Social Sciences) in order to determine the differences if any, When the difference was found significant the Bonferroni Test was applied to assess the location of significant difference in a pair wise manner, In addition to this , Karl Pearson's correlation was also employed to examine the relations between the scores of selected skill performances.*

Results: *Findings of statistical analysis showed that there were significant differences on kicking for accuracy parameter between 5minute – 20 minute, 10 minute – 20 minute warm up conditions. In Kicking for distance parameter, the solid significant difference was observed between the warm up durations of 5 minute – 10 minute, 5 minute – 15 minute, 5 minute – 20 minute, 10 minute – 15 minute and 15 minute –20 minute.*

Conclusions: *Warm-up of different durations has differential significant effects on kicking for accuracy and kicking for distance test, 20 min warm-up followed by 15 minutes warm-up, 10 min warm-up and 5 minute warm-up were found to be superior for improving performance in kicking for accuracy test, Similarly the subjects have shown their better performance in kicking for distance after 20 min warm-up followed by 15 minutes warm-up, 10 min warm-up and shown least performance after 5 minutes warm-up.*

KEY WORDS: *Duration, performance.*

1. INTRODUCTION

Warm-up before training or competition is generally considered to be essential, and these practices are commonly done to optimize overall performance. From decades practitioners have prescribed warm up to minimize the occurrence of injuries *(Ekstrand et al., 1983)* and to maximize the overall performance level of athletes *(De Bruyn-Prevost, 1980)*. The scientific approach supports the practise of warm up before any physical activity or competition, which increases muscle temperature, stimulates the overall performance of muscle contraction*(Segal et al., 1986)*, decreases the time of

muscles to reach peak tension and relaxation and reduces the viscous resistance of the muscle tissues and joints *(Wright, 1973)*. Additionally, the hyperthermia which is produced through warm up results the vasodilation and increases blood flow towards working muscles during exercise and most possibly resulting in the peak aerobic functioning due to abundant availability of oxygen supply *(Pearson et al., 2011; Gray & Nimmo, 2001).*Muscle temperature improves the performance of muscle glycolysis and high-energy phosphate degradation through exercise. The warm up need to be combination of rhythmic exercises, which initially raise the heart rate and muscle temperature, and static stretching with full range of motion. The rhythmic exercise will be the base of aerobic activities to come. For example, you might need to walk before you jog, or perform a little cardio dance moves before an aerobic or step class. The stretches inside the warm-up should be non-ballistic and cover all of the important muscle groups. Always stretch the lower back earlier than doing any lateral motion of the upper torso such side bends. Warm up prepares the players both psychologically and physiologically to compete in the main competition with full potential and confidence.

2. METHODS

Participants: Twenty experienced soccer players playing at the university level football tournaments participated in the study. The participants were fully informed about the protocol before the start of the study. The tests were always conducted on the same day (Tuesday), at football ground of Govt. College of Physical Education Gadoora Ganderbal Jammu and Kashmir, with the same researchers at each test with 1 week in between. In addition, the participants were instructed to avoid strenuous training for 24 h and no food consumption 2 h before each warming-up program.

OBJECTIVIES:

1. To observe the effects of 5 min, 10 min, 15 min and 20 min warm up on the kicking for accuracy performance of soccer players.
2. To examine the effects of 5 min, 10 min, 15 min and 20 min warm up on the kicking for distance performance of soccer players

HYPOTHESIS:

According to available literature in the field the following hypothesis was formulated:

H_1; The variation in the warm up duration would significantly affect the kicking for accuracy ability of soccer players.
H_2; The variation in the warm up duration would significantly affect the kicking for distance ability of soccer players.

Design: To compare the effects of duration of warm-up protocols upon on selected skill performance, a repeated measurement design was conducted in which the participants performed 4 warm-up protocols (5 minutes warm-up in ist week, 10 Minutes warm-up in second week, 15 minute warm-up in third week and 20 minutes warm-up in fourth week) with 1 week in between. To avoid a learning effect from occasion to occasion, pre experimental design was adopted. The independent variables were the type of warm-up (5 minutes, 10 Minutes, 15 minute and 20 minutes warm-up) and the dependent variable was the Kicking accuracy and kicking for distance performance. On each occasion, the participants performed 1 of the 4 warm-up protocols followed by the kicking accuracy and kicking for distance tests. Finnoff's kicking accuracy test and G H Warner's kicking for distance test were employed to collect reliable data.

Subjects: After due consideration of all the points, simple random sampling technique was employed and the sample size was targeted to 20 soccer players. The subjects had their regular training in physical activities as a part of their routine programme of the college. The requirements of the projects

were explained to all the subjects and a throw orientation of the testing procedure was carried out so that the subjects could give their best performance.

3. STATISTICAL ANALYSIS

Statistical Analysis *the* effects of the 4 warm-up protocols upon the kicking accuracy and kicking for distance performance were tested by repeated measure anova. When significant differences were found, Post hoc comparisons with Holm–Bonferroni corrections were conducted to locate differences; Greenhouse–Geisser adjustments of the p values were reported. The criterion level for significance was set at $p < 0.05$. All results were presented as mean ± SD. Statistical analysis was performed

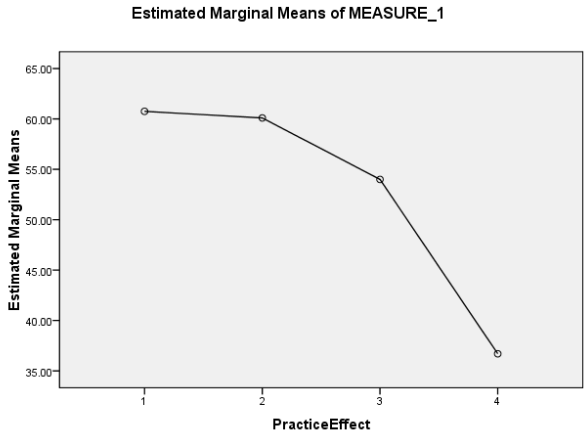
Table 1: Descriptive statistics showing mean and standard deviation of variables.

Kicking Accuracy	***N***	***Mean***	***SD***		***Kicking for Distance (Mean)***	***SD***
After 05 min. warm-up	20	60.75	5.74		28.30	4.95
After 10 min. warm-up	20	60.10	6.31		32.70	3.13
After 15 min. Warm-up	20	54.00	6.42		44.10	2.89
After 20 min. Warm-up	20	36.70	5.08		51.05	5.07

Table 2 :Showing repeated measure anova analysis of kicking accuracy

SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARE	F-RATIO	SIG.
TESTS OF WITHIN SUBJECTS	7542.24	2.29	3295.03	92.22	.000
TESTS OF BETWEEN SUBJECTS	1554.01	43.49	35.73		
TOTAL	9096.25	45.78			

A repeated measure ANOVA was run with warm up durations completed as the independent variable and kicking for accuracy as the dependent variable. Results of repeated measure ANOVA showed a significant difference between the descriptive statistic scores of kicking for accuracy between different warm up conditions I.e. 5 min, 10 min , 15 min and 20 min warm up condition); df (2.29 , 43.49) $F = 92.22$, $p < .05$. Bonferroni Post-hoc analysis revealed that in 5 min warm up condition (M = 60.75, Sd = 5.74) scored significantly lower than the 10 min warm up condition (M = 60.10, S.D 6.31) and 15 min warm up condition (M = 54.00, SD = 6.43) and 20 min warm up condition (M= 36.70, SD=5.08) in kicking for accuracy analysis.

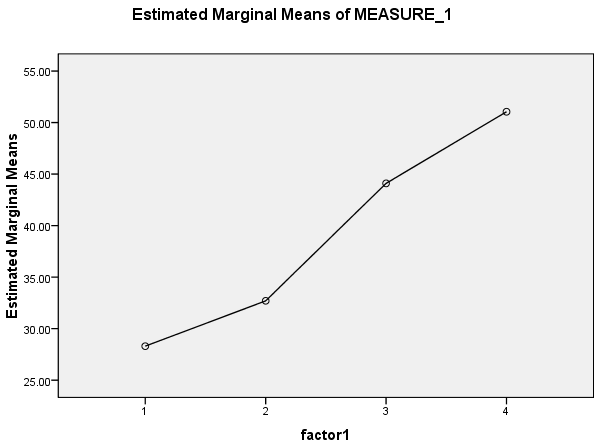


Bonferroni Post-hoc analysis revealed that there is a significant difference in the results of 5 min warm up condition with 20 min warm up condition and a significant difference between 10 min warm up condition and 20 min warm up condition plus a significant difference between 15 min warm up condition and 20 min warm up condition and 5 minute with 15 minute warm up condition in kicking for accuracy. However there was no significant difference between 5 minute with 10 minute warm up condition in kicking for accuracy.

Table 3: One way repeated measure anova analysis of kicking for distance

SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARE	F-RATIO	SIG.
TESTS OF WITHIN SUBJECTS	6507.74	1.44	4516.64	142.61	.000
TESTS OF BETWEEN SUBJECTS	867.01	27.38	31.67		
TOTAL	7374.75	28.82			

A repeated measure ANOVA was run with warm up durations completed as the independent variable and kicking for distance as the dependent variable. Results of repeated measure ANOVA showed a significant difference between the descriptive statistic scores of kicking for accuracy between different warm up conditions I.e. 5 min, 10 min , 15 min and 20 min warm up condition; df (1.44, 27.38) F = 142.61 , p < .05 . Bonferroni Post-hoc analysis revealed that in 5 min warm up condition (M = 28.30, Sd = 4.95) scored significantly higher than the 10 min warm up condition (M = 32.70, S.D 3.13) and 15 min warm up condition (M = 44.10, SD = 2.88) and 20 min warm up condition (M= 51.05, SD=5.07) in kicking for distance.



Bonferroni Post-hoc analysis revealed that, there is a significant difference in the results of 5 min warm up condition with 10 min, 15 min and 20 min warm up condition. A significant difference is also there between the 10 min warm up condition with 15 min warm up condition, plus there is also a significant difference between 15 min warm up condition and 20 min warm up condition.

DISCUSSION ON FINDINGS:

Results of 5 minutes warm up duration showed an insignificant difference with the 10 minutes warm up duration in case of kicking accuracy. The possible reason may be the subjects would have been experiencing a commencement or a primary stage of getting a treatment in the form of warm up. This primary stage of warm up would not have remained impactful enough to trace out a significant difference among the statistically analyzed results.

These findings found a partial support from the findings of Dr. Biswajit (2014), where he found an insignificant difference among the different warm up durations in some of the skill performances amongst the university level soccer players.

Considering the differences between the results, there was a significant difference observed in the results of the variable (Kicking for accuracy) between the warm up durations that are as follows:-

5 minute with 15 minute warm up duration showed a significant difference.

5 minute with 20 minute warm up duration showed a significant difference.

10 minute with 15 minute warm up duration showed a significant difference.

10 minute with 20 minute warm up duration showed a significant difference.

15 minute with 20 minute warm up duration showed a significant difference.

This may be because of the two evident reasons, I.e.: a standard gap between the warm up durations and another reason that we can possibly speculate while considering the results of 10 minute -15 minute warm up condition and 15 minute – 20 minute is that a 5 minute gap in these warm up durations was worthy enough to bring out a significant difference in the results is only because the subjects would have developed an effect of the warm up duration in their body right from the 5 minute warm up duration intervention. The effect of primary intervention and then a standard gap between the duration of the warm up protocol would have been very effective and impactful on the kinesthetic and vestibular senses resulting in showing a significant difference among the results. The above stated findings are supported by Abade et al. (2017) where a significant effect of the warming up activities was found on the soccer players of the U-19 football club of Portugal. The author concluded that the incorporation of the Plyo-metric exercises in the warm up schedule can be very effective in enhancing the performance among the soccer players.

There was also a significant difference between the results of different warm up durations in the kicking for distance variable. The study showed a significant difference between the warming up durations with the kicking for distance as follows:-

5 minute with 10 minute warm up duration showed a significant difference
5 minute with 15 minute warm up duration showed a significant difference
5 minute with 20 minute warm up duration showed a significant difference
10 minute with 15 minute warm up duration showed a significant difference
15 minute with 20 minute warm up duration showed a significant difference

The kicking for distance variable experienced the huge amount of significant difference in its results within different warm up durations as the fact of the matter is evident that the increase in the warm up duration could have made the subjects more agile and prepared for the task of distance kicks. Their musculo-skeletal systems would have experienced more and more mobility and efficiency in relation with the increase in warm up durations resulting in showing a significant difference. This finding supports the findings of Dr. Biswajit (2014), where he also observed a significant difference between the different warm up durations related to the parameter of kicking for distance.

CONCLUSION:

1. 5 minute – 10 minute warm up duration in case of kicking for accuracy was concluded with a result of having an insignificant result. Thus, more than 5 minutes time duration increase should be done if any concerned person wants to increase the kicking for accuracy skill in soccer.
2. 5 – 15 minute, 5 minute – 20 minute, 10 minute – 15 minute, 15 – 20 minute and 10 minute – 20 minute warm up durations showed a significant effect on the skill performance of kicking for accuracy. It is therefore concluded that a solid increase in time duration I.e.: 10 minutes and more than 10 minutes is very effective in bringing out a significant effect in kicking for accuracy parameter.
3. In kicking for distance, warm up of all the durations was observed to have a complete effect on the performance of the soccer players. This parameter was mostly evident in case of experiencing a significant effect in concerned with all the warming up durations , that in turn means the fact that the warm up is must and prerequisite in enhancing the kicking for distance parameter in the soccer players.
4. 20 min warm-up followed by 15 minutes warm-up, 10 min warm-up and 5 minute warm-up were found to be superior for improving performance in kicking for accuracy test.

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