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The Effect of Different Types of Warming on Technical Action in Small-Sided Games

Veysel BÖGE[1A], Adem CİVAN[1B]

[1] *Selcuk University, Sports Sciences Faculty, 42130, Konya-Turkey*
Address Correspondence to V. Böge: e-mail: veyselboge@gmail.com
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A:Orcid ID: 0000-0002-7466-1173 B:Orcid ID: 0000-0002-4813-6471

Abstract

It was observed that the desired behaviors and skills developed with the regulations and limitations in the small sided games (SSG). In this study, it is aimed to examine the effect of different warming types on technical actions in SSG for enhance the effect of SSG. Twenty-four male soccer players in the U-16 and U-17 teams who are one of the amateur league teams in Konya (mean age 16.41 ± 0.50 years, mean height 174.62 ± 7.66cm and body weight average 62.33 ± 7.83 kg) volunteered to participate in the study. Before the study, the players were divided into four groups; The first group started static warming up, the second group started dynamic warming up, the third group started warming up with the SSG, and the fourth group started the SSG without warming up. The study was applied as 3x4min/ 4min rest in 20x25m area. All the actions from the beginning to the end of the study were recorded with a camera at a height of 5m and technical actions were determined with Matball Analysis Program. Statistical analysis of the findings was performed by SPSS 23.0 computer program and the arithmetic mean and standard deviation of all parameters were calculated. Kruskal-Wallis test was used to evaluate the difference between the groups, and Mann-Whitney-U test was used to determine which group caused the difference. Differences at $p < 0.05$ were considered significant. Soccer players who participated in SSG with warming up with SSG attempted to play more dribble past in the first set than the groups that did static and dynamic warm ups, and in the third set compared to the group that participated in SSG without warming up and did dynamic warming up. In the first set, it was observed that the group that warmed up with the SSG intercepted the passing way more than the group that did not warm up. In addition, it was observed that received perception of exertion (RPE) of the groups that did not warm up in the first set were higher than the groups that did both static and dynamic warming up. All other parameters were also not significantly different between the groups. As a result, it was observed that the players participating in the SSG without warming up and warming up with SSG had more difficulty in the first set, but they adapted in the following sets. In addition, soccer players with different warming up protocols have shown similar responses to actions in SSG.

Keywords: Dynamic, soccer, ssg, static.

Farklı Isınma Türlerinin Sınırlı Alan Oyunlarındaki Teknik Aksiyonlara Etkisi

Özet

Sınırlı alan oyunlarında (SAO) yapılan düzenlemeler ve sınırlamalarla birlikte istenilen davranışların ve becerilerin geliştiği gözlemlenmiştir. Bu çalışmayla farklı ısınma türlerin sınırlı alan oyunlarındaki teknik parametrelere olan etkisine bakılması amaçlanmıştır. Konya amatör ligde yer alan bir takımdaki U-16 ve U-17 gruplarında bulunan yirmi dört erkek futbolcu(yaş ortalamaları 16.41±0.50 yaş, boy uzunluğu ortalamaları 174.62±7.66cm ve vücut ağırlığı ortalamaları 62.33±7.83kg) çalışmaya gönüllü olarak katılmıştır. Çalışma öncesinde sporcular dört gruba ayrılmış ve 15 dakika süreyle; 1.grup statik ısınma, 2.grup dinamik ısınma, 3.grup topla ısınma yaparak, 4.grup ise ısınma yapmadan SAO'na başlamıştır. Çalışma 20x25m'lik alanda, 4x3setx4dk dinlenme olarak uygulanmıştır. Çalışmanın başlangıcından bitişine kadar tüm aksiyonlar 5m yükseklikte bulunan kamera ile kaydedilmiş ve teknik aksiyonlar Matball analiz programıyla belirlenmiştir. Bulguların istatistiksel değerlendirilmesi SPSS 23.0 bilgisayar paket programıyla yapılarak, bütün parametrelerin aritmetik ortalamaları ve standart sapmaları hesaplanmıştır. Araştırmada gruplar arasındaki farklılığın değerlendirilmesi için Kruskal-Wallis testi, farklılığın hangi gruptan kaynaklandığının belirlenmesindeyse Mann-Whitney-U testi kullanılmıştır. $P<0.05$ düzeyindeki farklılıklar anlamlı olarak kabul edilmiştir. SAO oynadıktan sonra SAO'na katılan sporcular birinci sette statik ve dinamik ısınma yapan gruplara göre, üçüncü sette ise ısınmadan SAO'na katılan ve dinamik ısınma yapan gruba göre daha fazla çalım girişiminde bulunmuştur. Birinci sette SAO ile ısınma yapan grup ısınma yapmayan gruba göre daha fazla pas yolunu kestiği görülmüştür. Ayrıca ısınma yapmayan grupların birinci setteki zorlanma algıları hem statik hem de dinamik ısınma yapan gruplara göre daha yüksek olduğu gözlemlenmiştir. Diğer tüm aksiyon ve parametrelerde gruplar arasında anlamlı bir farklılık gözlemlenmemiştir. Sonuç olarak, SAO ve herhangi bir ısınma yapmadan SAO'na katılan sporcuların ilk sette daha fazla zorlandıkları bununla birlikte sonraki setlerde uyum sağladıkları gözlemlenmiştir. Ayrıca farklı ısınma protokollerindeki sporcuların SAO'ndaki aksiyonlara benzer tepkiler gösterdiği görülmüştür.

Anahtar Kelimeler: Dinamik, futbol, sao, statik.

INTRODUCTION

Soccer is a talent sport that is defined as performance under changing conditions and performance adaptation is expected depending on the conditions (13). Due to the nature of the game, intermittent performances are exhibited quite a lot during the competition. While low-intensity running, in which aerobic metabolism is dominant, constitutes 70% of the competition, 150-250 high-intensity intermittent running is performed during the competition through anaerobic metabolism (2,17). In recent years, coaches have preferred small-sided games (SSG) for the development of both physical and technical parameters, due to meeting these demands of football and, in addition, the development of technical parameters is essential.

SSG is an application that has more possession of the ball and increases the time spent with the ball, which is different from traditional training methods and field practices. In team sports, most of the training units include SSG, which is smaller than the field size in official competitions and the number of players is reduced (4). Since the potential of this training model improves the physical, technical and tactical performance of the players, it becomes the focus of attention of many trainers (18). In addition, scientists are more interested in understanding the different situations in small sided games (1). In addition to the effects of SSG, warming up protocols also provide many benefits on the performance of athletes. When we look at the warm-up practices in soccer, it typically includes static and dynamic stretching exercises as in other branches (1,7). In young soccer players, it is aimed to increase body

temperature in order to increase the range of motion (21) and motor unit speed in warm-up protocols, which can occur with dynamic movements (6).

Since FIFA developed and evaluated the injury prevention programs called "The 11" and "FIFA 11+", it has been shown in many scientific studies how simple exercise-based programs reduce injury events in amateur football players (4). In the light of this information, we aimed to enchance the effect of the SSGs with the most benefical warming up protocols. With this purpose we were to evaluate the effects of different warming up protocols to the small sided games on technical actions.

MATERIAL and METHOD

Participants

This study was carried out with 24 male soccer players aged between 15-17 ages, who are actively playing soccer which is one of the amateur teams in Konya, and who have played soccer for at least 3 years. Participants were included in the test regardless of whether they had right or left feet, and it was determined that the participants did not have any health problems or sports injuries. Before conducting the experiment, all participants were informed of the risks of the study and gave informed consent. For this study, approval was obtained from the non-invasive ethics committee of the Selçuk University Faculty of Sport Sciences (E-40990478-050.99-73807).

Table 1. Descriptive statistics of the physical features for young male soccer players

Variables	N	Mean	Sd	Minimum	Maximum
Height (cm)	24	175.46	6.82	165.00	191.00
Weight (kg)		62.88	8.18	45.00	76.00
Age (years)		16.42	0.50	16.00	17.00

Height and weight measurements

The height of each subject was measured with a stadiometer with a precision of 0.01 meters (m) and body weights (VA) with an electronic scale (SECA, Germany) with a precision of 0.1 kilograms (kg). During height measurements, the volunteers were stopped with their feet bare, heels together, knees tense, body and head straight, eyes facing forward. The sliding caliper rod was stopped when it touched the volunteers' head, and the closest value was recorded in centimeters (cm) as the height value. During weight measurements, the participants had bare feet and wore shorts or swimsuits that would not affect their weight. The value obtained on the scale screen is recorded in kg.

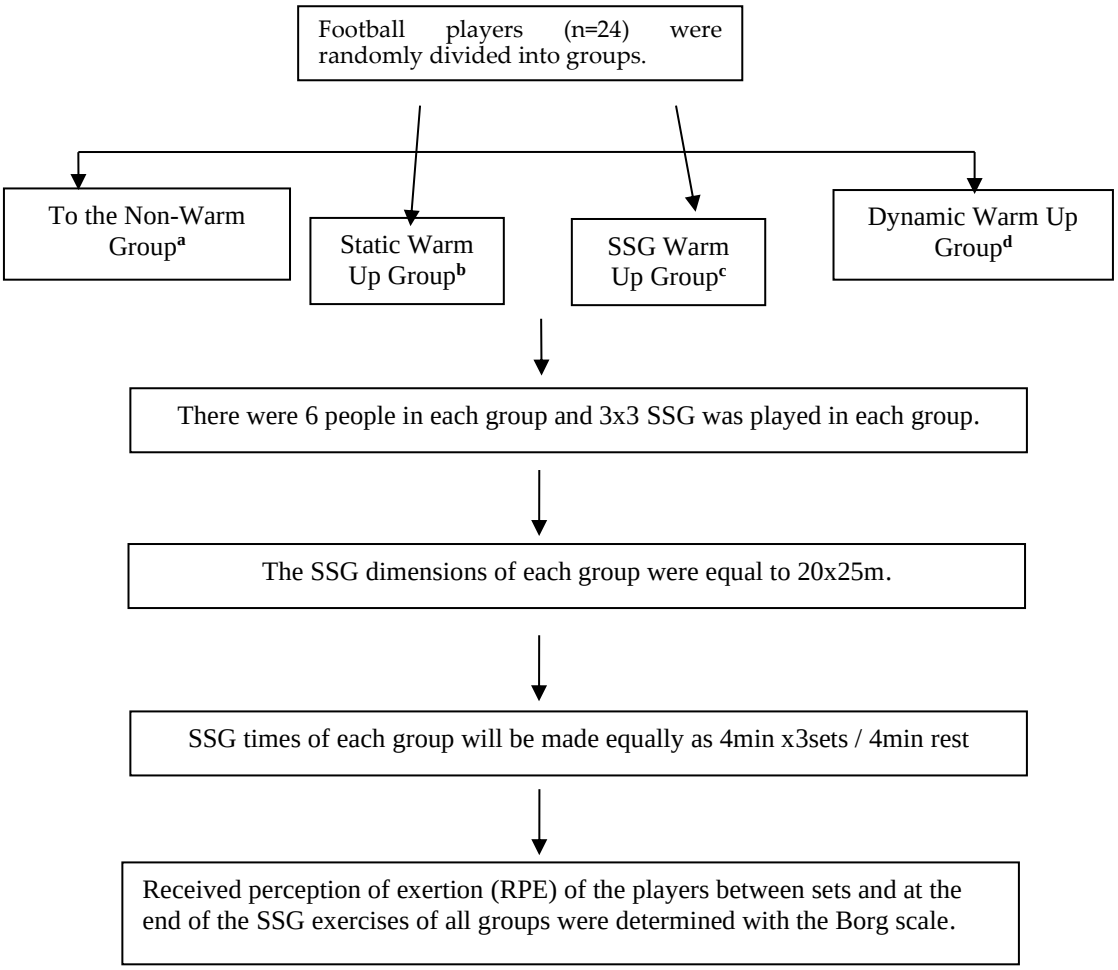
Matball Football Analysis

From the beginning to the end of the study, all the actions will be recorded with the camera at a height of 5m, and a computer-aided matball match analysis software program (Algoritma Bilgi Islem Ltd.Şti) was used in order to better reach the desired positions in small sided games, to evaluate the actions in a short time and to classify the analysis criteria. Actions in small sided games were examined with the computerized notation technique.

Technical Actions

Actions to be examined through the Matball football analysis program were handled and evaluated in 7 categories. These categories are; Data were collected as shooting, passing, negative passing, dribbling, dribble past, intercepting the passing way (IPW) and disrupting the opponent without the ball (DOWB).

Experiment Design



a: It means that the tests are carried out without warming up.
b: It means that the tests are performed after static warming up.
c: It means that the tests are carried out after warming up by playing Small Sided Games
d: It means that the tests are performed after dynamic warm-up.

Table 2. Some technical parameters of young male soccer players in SSG

Dependent Variables	Independent Variable	1.Sets	2. Sets	3.Sets	Total
Shooting	SW	0.83±0.47	1.33±0.49	1.33±0.42	4±0.93
	DW	0.50±0.34	1.5±0.22	1.17±0.48	3.17±0.65
	WSSG	0.83±0.17	1±0.52	1±0.37	2.83±0.60
	WW	0.83±0.17	0.33±0.21	0.67±0.42	1.83±0.60
	P Value	0.574	0.144	0.676	0.274
Passing	SW	7.83±1.42	6.33±1.28	6±1.46	20.17±3.18
	DW	8.67±1.15	9.33±0.56	7.67±0.71	25.67±1.52
	WSSG	9.67±0.99	8.50±1.69	6±0.82	24.17±1.62
	WW	10.33±1.91	8±0.93	11.83±3.46	30.17±6.15
	P Value	0.560	0.342	0.363	0.319
Negative Passing	SW	2±0.37	2.33±0.56	2.17±0.48	6.5± 0.67
	DW	2.17±0.48	2.5±0.22	2.67±0.71	7.33± 0.92
	WSSG	1.5±0.62	2.33±0.76	2.5± 0.56	6.33± 1.31
	WW	2.17±0.60	2.5± 0.62	0.83± 0.40	5.5±0.85
	P Value	**0.754**	**0.989**	**0.117**	**0.472**

SW: Static warming up, **DW:** Dynamic warming up, **WSSG:** Warming up with SSG, **WW:** Without warming up, P<0,05.

It wasn't observed that the change in shooting, passing and negative passing performance parameters among all groups.

Table 3. Dribbling, DP and IPW parameters to the groups in SSG

Dependent Variables	Independent Variable	1.Sets	2. Sets	3.Sets	Total
Dribbling	SW	0.17±0.17	0±0	0.83±0.40	1± 0.52
	DW	0.5±0.34	0.17±0.17	0.17±0.17	0.83± 0.40
	WSSG	0.5±0.22	0.17±0.17	0.83±0.31	1.5± 0.22
	WW	0.17±0.17	0.33±0.21	0.67±0.33	1.17±0.48
	P Value	0.556	0.513	0.377	0.606
DP	SW	0±0a	1.33±0.76	1.33±0.56	2.67±0.92
	DW	0±0a	0.67±0.21	0.5±0.22a	1.17±0.31
	WSSG	1.17±0.40b	1.83±0.75	2.17±0.48b	5.17±1.35
	WW	0.83±0.40	2.17±0.60	0.83±0.48a	3.83±1.22
	P Value	0.021*	0.390	0.050*	0,088
IPW	SW	1.33± 0.42	2.17± 0.75	1.33±0.42	4.83±0.79
	DW	2.17±0.65	1.5±0.43	2±0.26	5.67±0.92
	WSSG	0.83±0.17a	1.67±0.49	1.67±0.33	4.17±0.65
	WW	2.67± 0.49b	1.33±0.61	1±0.52	5±0.82
	P Value	0.028*	0.800	0.332	0.756

SW: Static warming up**, DW:** Dynamic warming up, **WSSG:** Warming up with SSG**, WW:** Without warming up**, DP:** Dribble Past, **IPW:** Intercepting the passing way**, a,b:** The difference between the means carrying different letters in the same column is important (P <0.05). *: (P <0.05).

Soccer players who participated in warming up with SSG (WSSG) with SSG attempted to play more dribble past in the first set than the groups that did static and dynamic warm-ups, and in the third set compared to the group that participated in SSG without warming up and did dynamic warm-up. In the first set, it was observed that the group that warmed up with SSG IPW more than the group that did not warm up.

Table 4. DOWB and RPE parameters to the groups in SSG

Dependent Variables	Independent Variable	1.Sets	2. Sets	3.Sets	Total
DOWB	**SW**	0.83±0.30	0.5±0.34	0.83±0.48	2.17± 0.87
	DW	1±.0.68	0.17±0.17	0.5±0.22	1.67± 0.71
	WSSG	0.33±0.21	0.33±0.21	1±0.26	1.67± 0.42
	WW	0.17±0.17	0.50±0.34	0.5±0.34	1.17± 0.31
	P Value	0.382	0.863	0.508	0.773
RPE	**SW**	10.33±0.42a	12.17±0.31	14.17±0.40	-
	DW	10±1.32a	12.17±0.40	12.83±0.83	-
	WSSG	12±0.26	12.67±0.42	12.5±0.50	-
	WW	12.5±0.34b	12.83±0.40	14±0.26	-
	P Value	**0.023***	**0.558**	**0.135**	**-**

DOWB: Disturbing the opponent without the ball**, RPE:** Received perception of exertion**, a,b:** The difference between the means carrying different letters in the same column is important (P <0.05). *: (P <0.05).

It was observed that RPE of the groups that did not warm up in the first set were higher than the groups that did both static and dynamic warming up. All other actions and parameters were also not significantly different between the groups.

DISCUSSION

It was observed that the desired behaviors and skills developed with the regulations and limitations in the SSG. In this study, it is aimed to examine the effect of different warming up types on technical actions in SSG for enhance the effect of SSG.

Small-sided games have been used to enhance the ecology of training routine on game performance of team sports in the last decade (10). Warming up strategies in pre match for team sports wish to maximal subsequent performances of players, while keeping this period effective duration of less than 16 minutes (15). In this view, SSG may offer additional benefits if implemented as a warm-up strategy in comparison with traditional warm-up activities. So, we did all our warm up routine in this perspective. And also, most research about SSG observed the long-term training effects, a few studies observed SSG as a warm up regimen reporting mixed results. And also, technical aspects of SSG have been widely studied (18,19). Most researchers have used the notational analysis to inspect some indicators, such as passing, receiving, turning, dribbling, intercepting, and shooting (19). Similarly, in this study, we researched these kinds of parameters. And we found that soccer players who participated and dynamic warm-ups, and in the third set compared to the group that participated in SSG without warming up and did dynamic warm-up. In another study, they observed that the number of technical actions was higher in the first two sets. These findings showed us tiredness led to decreases in the numbers of technical actions during the small side games (14). On the contrary this finding, all other actions and parameters were also not significantly different between the groups in this research. Similarly, Gabbett et al. (8) studied the effects of open-skill activities as a warm-up strategy for a team sport player and observed no changes in comparison with a traditional warm up. However, we must know that the effects of the warm up protocols appear to dependent on many factors, such as the type of sport, fitness of player and experience, tasks to be performed, environmental conditions, and constraints imposed by the organizers of the event (3,16).

Many methods are preferred to determine the loads that occur in training. Among these methods, one of the most suitable for soccer and applied safely in a practical way is the received perception of exertion (RPE) (12). Data obtained from indicators such as perceived difficulty levels in soccer have also shown that high intensity can be achieved using the ball (11,20). Similarly, in the first set, it was observed that the group that warmed up with SSG intercepted the passing way more than the group that did not warm. In addition, it was seen that the RPE values of soccer players after SSG are approximately between 5-8.9 (5, 9). These findings nearly, similiar in dynamic warm-up group and static warm-up group. However, it was observed that received perception of exertion (RPE) of the groups that did not warm up in the first set were higher than the groups that did both static and dynamic warming up. According to these findings, before play SSG we can prefer dynamic and static warming up. As a result, it was observed that the athletes participating in the SSG without warming up and warming up with the ball had more difficulty in the first set, but they adapted in the following sets. In addition, soccer players with different warming up protocols have shown similar responses to actions in SSG.

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