Evaluation of the Super League Team’s Competition Analysis before and after the COVID-19 Outbreak Is Given

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Abstract
The paper is aimed to determine whether there is a loss of performance by comparing the competition values of the Super League team before and after the COVID-19 epidemic. In order to reduce the performance losses of the athletes due to lack of training, 60-75 minutes of self-weight training was applied during the quarantine period. Paired t test was used for statistical analysis. A statistically significant difference was found in the Total Distance, High Intensity Distance, Sprint Distance, High Speed Distance, Number of High Intensity Runs, Number of Sprints, Number of High Speed Runs, Average Speed, Total Distance in Possession, Total Distance Out of Possession, Total Distance Ball Out of Play, High Intensity Distance in Possession, High Intensity Distance Out of Possession, High Intensity Distance Ball Out of Play, Sprint in Possession, Sprint Out of Possession, Sprint Ball Out of Play, High Speed Distance in Possession, High Speed Distance Out of Possession, High Speed Distance Ball Out of Play values of the athletes compared to p < 0.05. As a result, it has been observed that the training of super league football players with their own body weight during the quarantine period positively affects their performance during the season.
Keywords: COVID-19, Football, Education, Pandemic

1. Introduction

The new type of Coronavirus Disease (COVID-19) first appeared in Wuhan Province, China in late December 2019. It is a virus identified on January 13, 2020 as a result of research on a group of patients. Main symptoms of the respiratory tract are seen as fever, cough, and shortness of breath. The outbreak was initially detected in those in the seafood and animal market in this area. Later, it spread from person to person and spread to other cities in Hubei province, especially Wuhan, other provinces of the People’s Republic of China and other world countries. Coronaviruses are a large family of viruses that can cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections, ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The New Coronavirus Disease is caused by the SAR-CoV-2 virus.

Although it has been reported that there may be asymptomatic cases with symptoms, their rate is unknown. The most common symptoms are fever, cough and shortness of breath. In severe cases, pneumonia, severe respiratory failure, kidney failure and death may occur. In the first months of 2020, the virus spread rapidly, forcing many countries into a quarantine process where freedom of movement was restricted (TC Ministry of Health, 2020a, 2020b). Covidien-19 as it is in Turkey and Spread of Pandemic Process was published by the Ministry of Health of the Republic of Turkey and, as indicated in the data page is updated daily; Covidien-19 first cases in Turkey, it was found on March 11, 2020 (TC Ministry of Health, 2020b). May 12, 2020, the total number of tests performed in Turkey, as 16,013,974; The total number of cases from COVID-19 on the same date, 411,055; The total number of deaths was reported as 11,418. In mid-March, when the first case was detected, the daily average number of tests, which is 2-3 thousand, has recently reached 150 thousand 141. Still, the number of patients recovered in 19 cases in Turkey-Covidien is also well above the world average. As of November 15, 2020, the total cases worldwide were 53,507,282 of the total cases in Turkey it seems hardly to be 1% of this number (TC Ministry of Health, 2020a).

The World Health Organization (WHO) declared the epidemic as a pandemic after the meeting they held, declaring that the world is facing a serious problem (WHO, 2020). This decision taken by the World Health Organization has caused worldwide concern and fear. For this reason, countries have adopted very severe restrictions, including the curfew, and canceled many organizations. Despite the strict measures taken, with the addition of the inability to control the number of cases and deaths due to the COVID-19 pandemic (Zandifar & Badrfam, 2020), it was decided by the country federations to play the matches without spectators in order to prevent the spread of the pandemic, especially football (Çifçi & Demir, 2020).

Football is increasing its sphere of influence as football players and spectators in the world, and with this interest, a competitive environment has been created between teams and countries. With the help of sports sciences developing day by day, an increase in the
performance of football players has occurred. Performance is the ability of an athlete to
demonstrate his ability and capacity in the best way he undertakes during training or
competition (Arısoy et al., 2020).

Football is a sport of interaction (cooperative-position) between players, so training without
other players will be largely out of context and far from the demands of real competition
(Mon-Lopez, et al., 2020).

The matches were canceled on March 19, 2019 due to the COVID-19 epidemic that affected
the whole world after the TFF Super League, whose start and end date was planned to be
August 10, 2018 and May 19, 2019, was played for 26 weeks. After TFF’s announcement, the
TFF super league matches were postponed (the remaining 8 weeks of matches) with an
uncertain date (depending on the COVID-19 process). Later, the spread rate of COVID-19
was followed and it was decided to play the remaining 8-week matches, starting on 12 June
2019 for the 12-week inevitable break. In this process, it is known that football players must
maintain their performance in order to start the matches (TFF, 2020).

Training; It is a planned and scientific education process that aims to increase the
physiological, psychological, mental, technical, tactical, characteristics of human. Performance elements can be developed with a planned and systematic training and have
positive effects on the energy generation system. In addition, the cardiovascular system
improves with training, the aerobic strength of the athletes is improved and the resistance to
fatigue increases. Nerve-muscle harmony is improved with training and Strength increases.
Capabilities such as coordination, flexibility, mobility, skills are improved. In addition to
these developments, the technical, tactical, mental and psychological characteristics of the
athlete are reported (Bompa & Haff, 2015).

1.1 Detraining

Detraining, It is the case of a decrease and interruption in the duration, frequency and
intensity of the exercise performed to maintain the gains resulting from the training (Hyaat et
al., 2019).

The amount of reversibility of physiological adaptations that occur in exercise training; It
depends on the individual’s training status, genetic characteristics, how much the intensity
and frequency components of the exercise are reduced and how long the exercise is left
(Gelen et al., 2020). It is especially recommended for high-level athletes to reduce the lack of
training stimulus due to the epidemic, instead of stopping training completely in order to
reduce the negative effects on athlete performance. Previous gains begin to decline rapidly
with a short break to training (Bompa & Haff, 2015).

Mujika and Padilla (2000a, 2000b) discussed the effects of short and long-term detraining
periods on the organism as seen in Tables 1 and 2.
Table 1. The effects of the short-term detraining period on the organism (first 4 weeks)

| Declining Varieties                  | Increasing Varieties                  |
|--------------------------------------|---------------------------------------|
| Maximal oxygen consumption           | High density lipoprotein               |
| Blood volume                         | Lactate threshold                      |
| Exercise Stroke volume               | Bicarbonate level                      |
| Maximal Cardiac output               | Muscle glycogen level                  |
| Ventricular mass                     | Capillary density                      |
| Maximal respiratory volume           | Oxidative enzyme activity              |
| Oxygen pulse                         | Glycogen synthesis activity            |
| Durability performance               | Mitochondrial ATP production           |
| Insulin-mediated glucose uptake      | Average fibril cross section           |
| GLUT-4 protein content in muscle     | EMG activity                           |
| Muscle lipoprotein lipase activity   | Force-Power performance                |

Table 2. Effects of long-term detraining period on organism (4-8 weeks)

| Declining Varieties                  | Increasing Varieties                  |
|--------------------------------------|---------------------------------------|
| Maximal oxygen consumption           | Muscle glycogen level                  |
| Blood volume                         | Capillary density                      |
| Exercise Stroke volume               | Arteriovenous oxygen difference        |
| Maximal Cardiac output               | Oxidative enzyme activity              |
| Ventricular mass                     | Average fibril cross section           |
| Maximal respiratory volume           | FT: ST ratio                           |
| Oxygen pulse                         | Muscle mass                            |
| Durability performance               | EMG activity                           |
| Lipolysis                            | Force-Power performance                |
| High density lipoprotein             |                                       |
| Lactate threshold                    |                                       |

During the epidemic period, it was suggested that people should be mobile by exercising at home as much as possible. Therefore, programs have been prepared for athletes to do at home. These studies include stationary bicycles, treadmills, aerobic exercise and exercises with their own body weights. Aerobic exercises are those that produce low, medium or high cardiovascular tension.

WHO recommends muscle and bone strengthening exercises three times a week and 60
minutes of daily physical activity at moderate to vigorous aerobic intensity for children and adolescents (5-17 years) (WHO, 2010). WHO recommends 150 minutes/week of physical activity aimed at strengthening muscles and bones for adults and seniors over 17 years of age with vigorous aerobic exercise intensity 75 minutes/week or twice a week at moderate aerobic intensity intensity (WHO, 2010).

Connolly et al. (2020) suggested in order to prevent cardiovascular, metabolic and musculoskeletal fitness disorders; They suggested gymnastic and aerobic exercise programs. Stationary bicycles, treadmills, and other home-based sports equipment suitable for aerobic training can be used to achieve health effects. This type of exercise provides moderate to vigorous aerobic training when set up as high-intensity self-pace exercise that can be controlled by heart rate monitors or a power output loading program (Bingöl et al., 2020).

The aim of this study is the comparison of the match played after the exercises of untrained Super League footballers taking exercise with their body weights at home during the COVID-19 period and the last match before the isolation period.

2. Methods

2.1 Participants

Players who are in the TFF Super League Gazişehir Gaziantep Football A Team and have no health problems. The matches of Gazişehir Gaziantep-MKE Ankaragücü and Aytemiz Alanyaspor-Gazişehir Gaziantep were analyzed.

2.2 Home Exercises during Restriction and Isolation

During this period, athletes exercised their own body weights at home for 60 to 75 minutes every other day.

2.3 Measurement Methods and Tests

During the Competition Athletes’s parameters listed below were checked.

- Total Distance;
- High Intensity Distance (20 km/h-24 km/h);
- Sprint Distance (> 24 km/h);
- High Speed Distance (> 20 km/h);
- Number of High Intensity Runs;
- Number of Sprints;
- Number of High Speed Runs;
- Average Speed;
- Total Distance in Possession;
- Total Distance Out of Possession;
Total Distance Ball Out of Play;
High Intensity Distance in Possession;
High Intensity Distance Out of Possession;
High Intensity Distance Ball Out of Play;
Sprint in Possession;
Sprint Out of Possession;
Sprint Ball Out of Play;
High Speed Distance in Possession;
High Speed Distance Out of Possession, High Speed Distance;
Ball Out of Play.

2.4 Statistical Evaluation

The data obtained in the study were recorded regularly during the competition. The recorded data were transferred to the SPSS 22.0 package program and necessary statistical processes were applied. Normality tests of measurement variables were made. Paired t Test analysis, one of the parametric tests, was performed to determine the difference between the previous and post evaluations of the study group. The significance level of the study was accepted at \( p < 0.05 \).

3. Findings

Table 3. Statistical comparison of the Total Distance, High Intensity Distance (20 km/h-24 km/h), Sprint Distance (> 24 km/h), High Speed Distance (> 20 km/h) values of the research team’s last match before pandemic break and first match after the pandemic break

| Paired Differences | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | T | df | Sig. (2-tailed) |
|--------------------|------|----------------|-----------------|-----------------------------------------|---|----|----------------|
| Total Distance     | 4361.00000 | 1.41421 | 1.00000 | 4348.29380-4373.70620 | 4361.000 | 1 | .000 |
| High Intensity Distance | -37712.00000 | 2.82843 | 2.00000 | -37737.41241-37686.58759 | -18856.000 | 1 | .000 |
| Sprint Distance    | -60.50000 | 0.70711 | .50000 | -66.85310-54.14690 | -121.000 | 1 | .005 |
| High Speed Distance| 227.50000 | 3.53553 | 2.50000 | 195.73449-259.26551 | 91.000 | 1 | .007 |

Table 3 shows the comparison of Total Distance, High intensity distance, sprint distance and high speed distance values of the super league team with the Paired Sample-t test.
Statistically significant differences were detected in the values of Total Distance, High intensity distance, sprint distance and high speed distance (p < 0.05).

Table 4. The effects of the long term detraining period on the organism (4-8 weeks)

| Declining Varieties                  | Increasing Varieties                  |
|--------------------------------------|---------------------------------------|
| Maximal oxygen consumption           | Muscle glycogen level                 |
| Blood volume                         | Capillary density                     |
| Exercise Stroke volume               | Arteriovenous oxygen difference       |
| Maximal Cardiac output               | Oxidative enzyme activity             |
| Ventricular mass                     | Average fibril cross section          |
| Maximal respiratory volume           | FT: ST ratio                          |
| Oxygen pulse                         | Muscle mass                           |
| Durability performance               | EMG activity                          |
| High density lipoprotein             | Submaximal blood lactate              |
| Lactate threshold                    |                                       |

Table 4 shows the comparison of the Super League team’s Number of High Intensity Runs, Number of Sprints, Number of High Speed Runs and Average Speed values with the Paired Sample-t test. Statistically significant differences were detected in the values of Number of High Intensity Runs, Number of Sprints, Number of High Speed Runs and Average Speed (p < 0.05).

Table 5. Statistical comparison of the participants’ Total Distance in Possession, Total Distance Out of Possession, Total Distance Ball Out of Play between values of the last match before the and the first match after pandemic break

| Paired Differences |          |          |          |          |          |          |
|--------------------|----------|----------|----------|----------|----------|----------|
|                    | Mean     | Std. Deviation | Std. Error | Mean | 95 % Confidence Interval of the Difference | T | df | Sig. (2-tailed) |
|--------------------|----------|----------------|-------------|------|----------------------------------------|---|----|----------------|
| Total Distance of Possession | 5371.00000 | 1.41421 | 1.00000 | 5358.29380 | 5383.70620 | 5371.000 | 1 | .000 |
| Total Distance Out of Possession | 4389.50000 | .70711 | .50000 | 4383.14690 | 4395.85310 | 8779.000 | 1 | .000 |
| Total Distance Ball Out of Play | -5400.50000 | .70711 | .50000 | -5406.85310 | -5394.14690 | -10801.000 | 1 | .000 |
Table 5 shows the comparison of the Total Distance in Possession, Total Distance Out of Possession, Total Distance Ball Out of Play values of the super league team with the Paired Sample-t test. Statistically significant differences were detected in the values of Total Distance in Possession, Total Distance Out of Possession, Total Distance Ball Out of Play (p < 0.05).

Table 6. Statistical comparison of the participants’ High Intensity Distance in Possession, High Intensity Distance Out of Possession and High Intensity Distance Ball Out of Play between values of the last match before the and the first match after pandemic break

| Paired Differences | Mean       | Std. Deviation | Std. Error Mean | 95 % Confidence Interval of the Difference | T          | df | Sig. (2-tailed) |
|--------------------|------------|----------------|-----------------|------------------------------------------|------------|----|----------------|
| Mean               |            |                |                 |                                          |            |    |                |
| High Intensity Distance in Possession | 281.00000 | 1.41421        | 1.00000         | 268.29380 – 293.70620                    | 281.000    | 1  | .002           |
| High Intensity Distance Out of Possession | 76.50000  | .70711         | .50000          | 70.14690 – 82.85310                      | 153.000    | 1  | .004           |
| High Intensity Distance Ball Out of Play | -68.50000 | 2.12132        | 1.50000         | -87.55931 – -49.44069                    | -45.667    | 1  | .014           |

Table 6 shows the comparison of the High Intensity Distance in Possession, High Intensity Distance Out of Possession and High Intensity Distance Ball Out of Play values of the super league team with the Paired Sample-t test. Statistically significant differences were detected in the values of High Intensity Distance in Possession, High Intensity Distance Out of Possession and High Intensity Distance Ball Out of Play (p < 0.05).

Table 7. Statistical comparison of the participants’ Sprint in Possession, Sprint Out of Possession and Sprint Ball Out of Play between values of the last match before the and the first match after pandemic break

| Paired Differences | Mean       | Std. Deviation | Std. Error Mean | 95 % Confidence Interval of the Difference | T          | df | Sig. (2-tailed) |
|--------------------|------------|----------------|-----------------|------------------------------------------|------------|----|----------------|
| Mean               |            |                |                 |                                          |            |    |                |
| Sprint in Possession | 199.0000  | 1.41421        | 1.00000         | 186.29380 – 211.70620                    | 199.000    | 1  | .003           |
| Sprint Out of Possession | -252.5000 | .70711         | .50000          | -258.85310 – -246.14690                  | -505.000   | 1  | .001           |
| Sprint Ball Out of Play | -6.5000   | .70711         | .50000          | -12.85310 – -1.4690                      | -13.000    | 1  | .049           |

Table 7 shows the comparison of Sprint in Possession, Sprint Out of Possession and Sprint Ball Out of Play values of the super league team with the Paired Sample-t test. Statistically
significant differences were detected in the values of Sprint in Possession, Sprint Out of Possession and Sprint Ball Out of Play (p < 0.05).

Table 8. Statistical comparison of the participants’ High Speed Distance in Possession, High Speed Distance Out of Possession and High Speed Distance Ball Out of Play between values of the last match before the and the first match after pandemic break

| Paired Differences                          | Mean   | Std. Deviation | Std. Error | 95 % Confidence Interval of the Difference | T       | df | Sig. (2-tailed) |
|---------------------------------------------|--------|----------------|------------|-------------------------------------------|---------|----|-----------------|
| High Speed Distance in Possession           | 468.00000 | 1.41421 | 1.00000 | 455.29380 - 480.70620 | 468.000 | 1  | .001            |
| High Speed Distance Out of Possession       | -168.50000 | 2.12132 | 1.50000 | -187.55931 - 149.44069 | -112.333 | 1  | .006            |
| High Speed Distance Ball Out of Play        | -78.00000 | 2.82843 | 2.00000 | -103.41241 - 52.58759 | -39.000 | 1  | .016            |

Table 8 shows the comparison of High Speed Distance in Possession, High Speed Distance Out of Possession and High Speed Distance Ball Out of Play values of the super league team with the Paired Sample-t test. Statistically significant differences were detected in the values of High Speed Distance in Possession, High Speed Distance Out of Possession and High Speed Distance Ball Out of Play (p < 0.05).

4. Discussion

To the best of the authors of the study, COVID-19 is the first study to evaluate team performance before and after the mandatory break given to football during the epidemic period.

The research shows that after the mandatory break due to COVID-19, the athletes cannot leave their homes and the trainers have prepared some exercise programs that the athletes can do at home to close this period with minimum performance loss. As a result of the exercises performed by the football team with their own body weights at home, some performance values of the team were discussed. According to this; When the values of the last match of the super league team before and the first match after the COVID-19 break, which is an average of 3 months, are examined, statistically significant differences were found in the Total Distance, High Intensity Distance, Sprint Distance, High Speed Distance, Number of High Intensity Runs, Number of Sprints, Number of High Speed Runs, Average Speed, Total Distance in Possession, Total Distance Out of Possession, Total Distance Ball Out of Play, High Intensity Distance in Possession, High Intensity Distance Out of Possession, High Intensity Distance Ball Out of Play, Sprint in Possession, Sprint Out of Possession, Sprint Ball Out of Play, High Speed Distance in Possession, High Speed Distance Out of Possession, High Speed Distance Ball Out of Play values compared to p < 0.05.
When the literature is examined; Mon-Lopez et al. (2020) stated that regarding the sports level of football players, male professional footballers train more days and hours than non-professional players. However, they noted that female professional footballers train more intensely and more days than non-professionals.

Reardon et al. (2019) and Mon-Lopez et al. (2020) stated in their study that moods and emotional intelligence can affect training variables and the performance of top-level football players. As a professional footballer who played in Turkey league COVID-19 to perceive the fear and the stress level is moderate and footballers were not very impressed by this process actually Çifçi and Demir (2020) was stated.

As a result, it was determined that professional football players who could not leave the house due to mandatory restrictions prevented the loss of performance in the work done with their own body weights during this period.

It is generally accepted that there is an overall loss of around 10% for each week of inactivity (Varandas et al., 2017). In the face of COVID-19, any epidemic or any compulsory situation that will restrain athletes to their homes, it is thought that athletes will at least reduce inactivity with their own bodyweight training and prevent performance loss. When this or a similar situation is encountered, the training should be increased gradually when the athletes return to the season and the risk of injury should be tried to be minimized.

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