Giornale Italiano di Educazione alla Salute, Sport e Didattica Inclusiva / Italian Journal of Health Education, Sports and Inclusive Didactics - ISSN 2532-3296 - Anno 5 n. 3 Supplemento - ISSN 2532-3296 ISBN 978-88-6022-423-1 - luglio - settembre 2021 - CC BY-NC-ND 3.0 IT: https://doi.

MODIFICATIONS OF PLAYER PERFORMANCE IN ELITE FOOTBALL DURING COVID-19 LOCKDOWN: A REVIEW

CAMBIAMENTI NELLE PRESTAZIONI DEI GIOCATORI D'ELITE NEL CALCIO DURANTE IL LOCKDOWN DA COVID-19: UNA REVISIONE

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Abstract

Background: In 2020 many people, including professional sportsmen, were in quarantine for many months around the world. Professional football players change the modality of training. So, it is indispensable to understand the performance modifications after lockdown.
Methods: A search was conducted on the main international databases considering the studies conducted in elite football.
Results: The studies show a decrease in performance abilities, and a worsening of athletic state.
Conclusions: Lockdown degraded performance of professional players, and this coincides with a drastic decrease in technical and tactical training. Therefore, it is important to consider future solutions for similar situations.

Background: Nel 2020 molte persone, compresi gli sportivi professionisti, sono stati in quarantena per molti mesi in tutto il mondo. I giocatori di calcio professionisti hanno cambiato la modalità di allenamento. Quindi, è indispensabile capire le modifiche delle prestazioni dopo il blocco.
Metodi: È stata condotta una ricerca sui principali database internazionali considerando gli studi condotti nel calcio d'élite.
Risultati: Gli studi mostrano una diminuzione delle capacità di prestazione e un peggioramento dello stato atletico.
Conclusioni: Il blocco ha ridotto le prestazioni dei giocatori professionisti, e questo coincide con una drastica diminuzione dell'allenamento tecnico e tattico. Pertanto, è importante considerare soluzioni future per situazioni simili.

Keywords

Football, Covid-19, Coronavirus, Training, Performance
Calcio, Covid-19, Coronavirus, Allenamento, Performance

Introduction

In December 2019, a novel coronavirus, termed "SARS-CoV-2", announced by the World Health Organization (WHO) as being responsible for the outbreak of COVID-19, was reported [1]. The first case of an unidentified form of viral pneumonia was reported in Wuhan city, Hubei province, China, in December 2019[2]. As of 24 January 2021, the SARS Covid 2019 syndrome caused 98280844 infections and 2112750 confirmed deaths. The pandemic has led to containment measures and has inevitably had a significant impact on the Western lifestyle, overwhelming and changing, albeit only temporarily, lifestyles, work, leisure and the habits of the world we live in. The lockdown due to the COVID emergency was a critical moment with a strong impact, representing a real traumatic event for mental health [3]. Lockdown is a containment measure applied in many countries around the world, and sport stopped by many countries, creating a situation in sports leagues like in World War II [4]. In fact, the Covid-19 situation gives many economic problems for football clubs and other sport: the lack of public in games seriously damaged team's finances [5,6,7]. Furthermore, the majority of people reduced their physical activity during lockdown [8], caused by the closure of many sport centers; also elite sportsmen reduced their training [9]. Schüttler [10] shows the decrease of ball training in soccer in amateurs and professional players, while Rampinini[11] shows the comparison between stop summer period (2016/17) and lockdown 2020 period, and finds that in summer period there was a decrease of athletic ability minor than a lockdown period; Cavarretta[12] finds similar modifications of heart parameters in lockdown period with detraining.

So, the rationale of this study is finding the modifications in strength and conditioning performance or in anthroprometric parameters in elite football players in a period without the ball and tactical training.

Methods

The research "soccer covid" gives 52 results on PubMed, 32 on CINAHL Database, 220 on Taylor & Francis Online, 555 on SCOPUS at 22/06/2021. The research "football covid" gives 88 results on PubMed, 53 on CINAHL Database, 457 on Taylor & Francis Online, 787 on Scopus at the same date. There are considered only results that presented comparisons of athletic or anthroprometric parameters between pre and post lockdown period, with a defined training program. Result of studies of elite football player after detraining are not considered. After removing duplicated results, only comparative studies that show differences in performance factors between pre e post quarantine are considered: PubMed 3 results, Scopus 2 results (2 at the same on PubMed), CINAHL and Taylor & Francis Online 0 results. 1 result is a study about female players.

Results

The Table 1 shows the results and trainings. In his study de Albuquerque Freire [13] indicated a significant reduction of ~12.5% in relative distance, 13.3% in acceleration and 19.8% in deceleration during quarantine, with an impact on the maximal speed performed; Grazioli [14] in his study investigates the response of players after 63 quarantine days without normal training, trying a training set of home-based workouts; Pedersen [15] shows the results of his training program on 13 female soccer players, describing types of training (in minutes) before and after lockdown period and giving the results of tests.

Discussion

In major European League, before return to play matches there was only a small period of return to normal playing, and part of this period consists in individual training. Studies gives an important result: the lack of training with the ball (technical and tactical training, that it can define "Special Training") reduced athletic factors, despite the increase of athletic training. Spyrou [16] finds similar results in elite Futsal players. These results can give a great importance in sport special training: the normal training (special and athletic training) gives athletic improvements better

than only athletic training. The tests in all 3 studies demonstrate that a period with only athletic training in soccer players is not adequate to improve training skills. This situation can be defined a lack of "Special Conditioning": strength and conditioning is not only connected with athletic training, but it is also improved by Sport training. This situation is demonstrated by games after lockdown: Garcia-Aliaga [17] and de Souza [18,19] find that the team performance decreased post lockdown, while Seshadri [20] reports an injury rate higher than the pre lockdown period.

About players'mental health, during lockdown players had an increased presence of symptoms such as depression, anxiety, problem to sleep and distress [21,22,23,24], caused by isolation and change of habits, also in training.

Conclusions

Performance athletic players decrease due the lack of ball training in lockdown period. So it is important to create a solution to continue team training in any new quarantine periods; in fact soccer can't be considered a risk factor to contract Covid-19 [25,26,27,28]. However, there were positive aspects: keeping the five substitutions can improve the performance and the level of performance [29,30], and the situation can be an opportunity to study new possibilities of ball and technique training in strength and conditioning training, but it is important to do other studies in professional players in football and in team sports.

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Authors	Pubblication's year	Methods	Participants	Results of tests (average) Before Lock-down/After Lockdown
de Albuquerque Freire et al[10]	**2020**	**Comparative study** **Yo yo test pre and post quarantine** three times a week for 30 min per session of aerobic training between □65 and□75% of maximal heart rate **10 min of** warm-up workout and cool-down; **15 min of mini-band workouts**: 3× the 60 s each exercise in the continuous circuit training: jumping jacks, jumping squat tap, alternating forward lunges, burpees, fast lateral walks; **15 min of functional exercises**: 8 min dynamic mobility workout – 30 s skipping with and 30 s without shoulder rotation, 30 s skipping with high knees, 30 s running with butt kicks, 30 s side to side with and 30 s without arm movement, 30 s running opening the gate and 30 s closing the gate, 240 s running with leg stretch and swing variations 1:10 s, 2 min of suicide drills and 5 min coordination with the ball; **15 min exercise bike workout**.	**20 professional players**	**Total distance (m)** 1570.51 / 1477.84 **Relative distance (m/min)** 161.74 / 141.11 **Max speed (km/h)** 18.72 / 18.18 **Acceleration (>2 mms) (freq.)** 59.94 / 52.00 **Decelerations (>2 mms) (freq.)** 33.67 / 27.00 **Walking/ jogging (0-11 km/h) (m)** 226.36 / 254.45 **Moderate running speed (11-15.5 km/h) (m)** 471.28 / 422.15 **Fast speed running (15.5-19 km/h) (m)** 871.83 / 803.26 **Total time (min)** Pre 9.65/10.94

Grazioli et al[11]	**2020**	**Comparative study Home-based workouts** using only the body mass as resistance during quarantine (i.e., warm-up of knee/hip mobility exercises and 3 sets of 10–15 repetitions of vertical jumps, jumping lunges, lateral squats, isometric hip thrust, isometric squat, plantar flexion, Nordic hamstring exercise, unilateral stiff, inverse Nordic exercise, horizontal jumps, and 30–60 seconds of skip and core exercises).	**23 professional players**	**Fat mass (%)** 10.67±1.71 / 12.00 ±2.12 **Body mass (kg)** 78.43 ±8.70 / 80.03 ±10.01 **CMJ (cm)** 43.46 ±4.97 / 41.90 ±5.90 **SJ (cm)** 3 8.74 ±4.02 / 37.35 ±5.33 **Absolute hamstring eccentric strength (N)** 403.71 ±53.57 / 403.72 ±44.73 **Relative hamstring eccentric strength (N·kg21)** 5.28 ±0.88 / 5.04 ±0.66 **10-m sprint time (s)** 1.57 ±0.08 / 1.69 ±0.12 **20-m sprint time (s)** 2.81 ±0.12 / 2.96 ±0.17 **Intermittent cardiorespiratory fitness (m)** 1,670.71 ±167.94 / 1,613.86 ±163.84