EFFETTI DELLA RESTRIZIONE DELL'AREA DI CAMPO DI COMPETENZA SUL COMPORTAMENTO TATTICO, SULLE PRESTAZIONI FISICHE E FISIOLOGICHE NELLE ESERCITAZIONI SU CAMPO GRANDE.

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ABSTRACT

Lo scopo di questo studio è quello di identificare in che modo le restrizioni dell'area del campo influenzano il comportamento tattico, le prestazioni fisiche e fisiologiche dei giocatori durante le esercitazioni in spazi di grandi dimensioni. È stata proposta un'esercitazione 10c9 su dimensioni ampie con 3 differenti varianti:

- *(a) spazi vincolati*, il campo è stato diviso in aree specifiche in cui i giocatori sono stati posizionati senza che potessero variare la loro posizione;
- (b) *spazi continui*, il campo è stato diviso in aree specifiche in cui i giocatori potevano spostarsi solamente in una zona di campo vicina;
- (c) *spazi liberi*, dove i giocatori non avevano vincoli nell'occupazione dello spazio.

I dati relativi al posizionamento in campo sono stati utilizzati per calcolare l'indice di "esplorazione spaziale" e la distanza percorsa, l'entropia e la frequenza della formazione di coppie utili al passaggio con i compagni di squadra. Le prestazioni fisiche e fisiologiche dei giocatori sono state analizzate attraverso la distanza percorsa a diverse velocità, il ritmo di gioco e la frequenza cardiaca. I valori più alti sono stati registrati durante le esercitazioni a *spazi liberi*. Il numero di coppie utili all'esecuzione di un passaggio è stato superiore nelle condizioni di *spazi continui* e *spazi liberi*. Al contrario, relativamente alle velocità di corsa, le esercitazioni con *spazi vincolati* hanno fatto registrare una diminuzione dei valori rispetto ad altre situazioni di gioco (20-50% per la corsa a bassa intensità e 60-90% per la corsa ad alta velocità).

Nel complesso, limitare l'"esplorazione spaziale" dei giocatori (utilizzando esercitazioni con spazi vincolati) ha notevolmente compromesso l'adattamento al posizionamento dei compagni di squadra con una diminuzione delle prestazioni fisiche e fisiologiche. Questi risultati consentono una migliore comprensione delle scelte di gioco fatte da parte dei giocatori in base alle regole specifiche delle esercitazioni e possono essere rilevanti per arricchire la programmazione delle sedute, in modo che gli allenatori conoscano l'effetto ottenuto utilizzando esercitazioni con *spazi vincolati*.

APPLICAZIONI PRATICHE

Gli effetti di limitare lo spazio dei giocatori ha avuto un forte impatto sull'adattamento tra i compagni di squadra durante esercitazioni con spazi ampi. Le esercitazioni con *spazio libero* sono apparse come una soluzione ottimale per migliorare la sincronizzazione tra i movimenti dei giocatori e la prevedibilità delle distanze tra i vari giocatori, mentre aumentano le prestazioni fisiche e le richieste fisiologiche. **Questi risultati supportano in modo particolare le applicazioni pratiche, in quanto consentono agli allenatori di scegliere diverse tipologie di esercizi che promuovono un comportamento tattico simile. Considerando la somiglianza tattica tra esercitazioni con restrizioni spaziali ed esercitazioni con occupazione libera degli spazi, gli allenatori possono ottenere effetti tattici simili, ma con richieste fisiche e fisiologiche differenti.**
La ricerca di soluzioni collettive efficaci è presumibilmente collegata alla capacità dei giocatori di muoversi sul campo, in base a informazioni spazio-temporali relative al posizionamento dei compagni di squadra. In questo caso particolare, considerando i giocatori professionisti, i partecipanti sembrano beneficiare della sincronizzazione con il posizionamento dei compagni di squadra, piuttosto che concentrarsi sui vincoli dell'area limitata dell'esercitazione richiesta. Però, si deve considerare che le esercitazioni con spazi vincolati possono anche contribuire ad un aumento dell'attenzione alle risposte tattiche (ad esempio, situazioni di 1c1 o passaggio a breve distanza) durante esercitazioni con spazi ampi, nonostante le prestazioni fisiche e fisiologiche siano più basse. **Questi risultati possono assumere un'importanza maggiore per la programmazione delle sedute di allenamento, in modo tale che gli allenatori conoscano gli effetti dell'aumentare o del ridurre le possibilità di posizionamento in campo di un giocatore e la sua risposta fisica quando si utilizzino specifiche zone di posizionamento in campo.**

EFFECTS OF PITCH AREA-RESTRICTION ON TACTICAL BEHAVIOR PHYSICAL AND PHYSIOLOGICAL PERFORMANCES IN SOCCER LARGE-SIDES GAMES

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ABSTRACT

The aim of this study was to identify how pitch area restrictions affect the tactical behavior, physical, and physiological performances of players during soccer large-sided games. A 10 vs. 9 large-sided game was performed under 3 experimental conditions: (a) restricted-spacing, the pitch was divided into specific areas where players were assigned and they should not leave it; (b) contiguous-spacing, the pitch was divided into specific areas where the players were only allowed to move to a neighboring one; (c) free-spacing, the players had no restrictions in space occupation. The positional data were used to compute players' spatial exploration index and also the distance, coefficient of variation, approximate entropy, and frequency of near-in-phase displacements synchronization of players' dyads formed by the outfield teammates. Players' physical and physiological performances were assessed by the distance covered at different speed categories, game pace, and heart rate. Most likely higher values were found in players' spatial exploration index under free-spacing conditions. The synchronization between dyads' displacements showed higher values for contiguous-spacing and free-spacing conditions. In contrast, for the jogging and running intensity zones, restricted spacing demanded a moderate effect and most likely decrease compared with other scenarios (20–50% to jogging and 60–90% to running). Overall, the effects of limiting players' spatial exploration greatly impaired the coadaptation between teammates' positioning while decreasing the physical and physiological performances. These results allow for a better understanding of players' decision-making process according to specific task rules and can be relevant to enrich practice task design, such that coaches acknowledge the differential effect by using specific pitch-position area restrictions.

PRACTICAL APPLICATIONS

The effects of limiting players' spatial exploration to a given pitch-position area greatly impacted the coadaptation between teammates during the soccer LSG. The freespacing scenario appeared as an optimal solution to promote the synchronization of players' displacement and the predictability of interpersonal distances, while increasing the physical and the physiological demands. These results support a particularly important practical application, as they enable coaches to choose from different exercise possibilities that promote similar tactical behavior. Considering the similarity of tactical results between contiguous-spacing and free-spacing situations, coaches' may obtain similar team-behavioral effects in practice, while eliciting different physical and physiological demands. The search for effective collective solutions is presumably linked to players' ability to explore local interactions, based on spatiotemporal related information of teammates' positioning. In this particular case, considering professional players, participants seem to benefit from attuning to teammates' positioning, rather than focusing on task-area constraints. However, it should also be noted that restricted-spacing scenarios, can also contribute in increasing the focus on tactical micro responses (e.g., 1 vs 1 situations, short-distance passing.) while playing a LSG, despite the lower physical and physiological demands. These results may assume a major relevance for practice task design such that coaches acknowledge the differential effect of restricting or amplifying player's displacement possibilities and their physical and physiological responses using specific pitch-position areas.

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