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Using the Power Plate® machine during half time in a soccer match increases performance and reduces the risk of injuries during the second half.

This is a summary of two studies, both conducted at the University of Hull.

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Summary of Findings:

It is well known that the performance of players who do not do any type of re-warm-up intervention during half time decreases. Researchers at the University of Hull found that using a Power Plate® machine during half time prevented a decrease in performance during the start of the second half. They also found that soccer players who used the Power Plate machine at half time had decreased fatigue in their hamstring muscles and improved lower limb stability, at the start of the second half of the match.
The researchers concluded that use of a Power Plate machine during half time could be an effective re-warm-up activity for soccer players, both to prevent a decrease in performance and reduce the risk of injury, especially as players are not allowed to use the field during half time.

Introduction:

Over the last few years, an increasing number of reports have confirmed that the performance of soccer players deteriorates during the initial phase of the second half of competitive match play. During the first 15 minutes of the second half, soccer players will cover less total distance and less distance at high speed, when compared with the first 15 minutes of the first half. This period of play has also been associated with an increased incidence of muscular injuries.

It is believed that the decrease in physical performance may be due to a lack of preparation for the second half, as players will perform intensive warm-up protocols before commencing play, but do not usually perform any sort of re-warm-up prior to the start of the second half of the match. This means their muscle temperature is lower at the start of the second half, which can impair neuromuscular coordination and performance and increase the risk of injury.

Creating an appropriate re-warm-up protocol for soccer players during half time is difficult, because coaches are often unwilling to sacrifice time that could otherwise be spent on tactical or motivational discussion, and players are often not allowed to use the playing surface during half time. Two studies were conducted to investigate if use of the Power Plate machine could overcome these obstacles, as players can use the machine while listening to the coach, and without having to use the playing surface.

Method:

The subjects in both studies were ten semi-professional male outfield soccer players, who performed a 90 minute fixed-intensity soccer simulation (SAFT90). The SAFT90 is a protocol that simulates competitive match-play, by replicating all aspects of the game, such as acceleration, deceleration, cutting, side-stepping, backwards and forwards running. During the 15 minute half time period, the participants in the Control group remained seated, while another group were asked to perform Intermittent Agility Exercises (IAE group), which is comparable to a standard soccer warm-up, and the final group received intermittent exposure to the Power Plate machine (PP group).

The IAE group performed soccer-specific agility drills at a work:rest ratio manipulated during half time to elicit the required intensity (70% HRmax for 6 minutes). The PP group stood in a static squat (~30° knee flexion) on a Power Plate pro5 AIRdaptive™ High Performance model (see figure 1). They did three consecutive squats, holding each for 60 seconds, with 60 seconds of rest between each one, while the machine was set at 40Hz and Low amplitude.

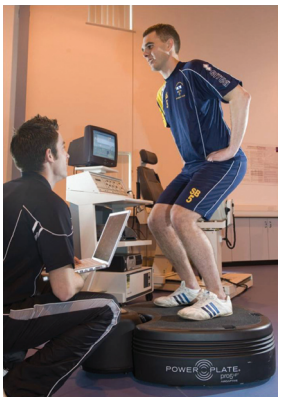

Figure 1

Power Plate® Training Improves Soccer Performance

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Results:
The results show that there was a significant increase in sprint time (indicating a decrease in the ability to perform) for the Control group, between the end of the first half (30-45) and the start of the second half (46-60). However, there was little or no increase in sprint time for both the IAE and PP groups during the same time period (see figure 2), indicating their ability to perform had not decreased.

Jump performance also decreased significantly for the Control group during the first 12 minutes of the second half, but not for either re-warm-up groups (see figure 3). As performance levels only decreased in the Control group, it indicates that any type of re-warm-up protocol can help soccer players maintain performance during the second half of a match.

As muscle temperature did not increase significantly in the PP group, after their re-warm-up protocol, these results are most likely due to the neural potentiation generated through the vibrations.

The second study focused on hamstring stability and markers of hamstring injury. The results of this study showed that time to stabilization, after hopping on the dominant leg, was significantly reduced for the PP group, when compared to the Control group. The other markers of hamstring injury showed that the hamstring muscles were less fatigued, reducing the chance of injury.

Figure 2

* significantly greater than the sprint time at 30-45min.

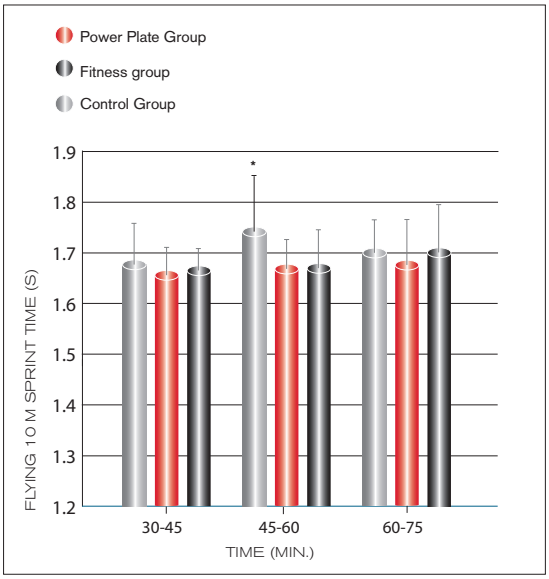
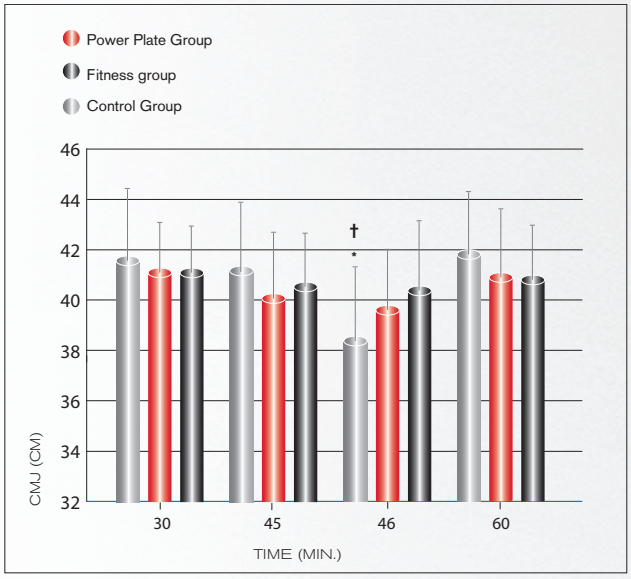


Figure 3

* significantly less than 45 min.
† significantly less than the PP and IAE group.



Conclusion:

- Use of the Power Plate machine during half time ensured that both sprint performance and counter movement jump performance did not deteriorate during the second half of the match, when compared to the Control group.
- Use of the Power Plate machine also decreased fatigue and increased coordination in the hamstring muscles, reducing the risk of injury, when compared with the control group.
- These results indicate that the Power Plate machine is a viable option for re-warm-up interventions, as not only can it help players to maintain performance and reduce the risk of injury, it also gives them a way to achieve a re-warm-up without having to use the playing surface or miss out on tactical or motivational discussions from the coach.