



Figure 2.—Local-RPE: the body muscles participation on the Slackline training sessions expressed by judoists (average values of the whole Slackline training program). Only half of the anterior (left) and posterior (right) sides of the body are shown; however, the ratings are for both sides of the body.

Figura 2. — *PE locale: coinvolgimento dei muscoli corporei nelle sessioni di allenamento di slacklining riferito dai judoisti (valori medi dell'intero programma di allenamento di slacklining). Viene mostrata solo la metà dei lati anteriore (sinistro) e posteriore (destra) del corpo; tuttavia, i punteggi riguardano entrambi i lati del corpo.*

Throughout developing the present study, it was easy to observe how judoists considered as fun and challenging the activity, which indicates that it might be easily accepted as a training task by any athlete.

In terms of local-RPE, judoists indicated that the calves, hamstrings and quadriceps muscles were the most active muscles during slackline training. Rodacki *et al.*²⁵ showed that these are the muscles most relevant for jumping in humans, and Jakobsen *et al.*²⁶ that changes in jump performance are related to changes in neuromuscular activity of the hamstring muscle. Results of the present study, also indicate that judoists felt that these muscles were very active during slacklining. Previous studies have shown enhanced neuromuscular activity of the lower limb muscles (tibialis anterior, gastrocnemius medialis, rectus femoris, biceps femoris, gluteus medius and adductor longus) during slacklining.⁵ On the other hand, muscles such as lumbar, adductors and gluteus were rarely

*che per i giovani e gli adulti*²⁴. Nel corso del presente studio, è stato osservato che i judoisti consideravano l'attività divertente e stimolante, il che indica che potrebbe essere facilmente accettata come compito di allenamento da qualsiasi atleta.

In termini di RPE locale, i judoisti hanno indicato che polpacci, muscoli ischiocrurali e muscoli quadricipiti erano i muscoli più attivi durante l'allenamento di slacklining. Rodacki *et al.*²⁵ hanno mostrato che questi sono i muscoli più importanti per il salto negli esseri umani, mentre Jakobsen *et al.*²⁶ hanno osservato che i cambiamenti nella performance del salto sono associati a cambiamenti nell'attività neuromuscolare dei muscoli ischiocrurali. Inoltre, i risultati del presente studio indicano che i judoisti hanno percepito che tali muscoli erano estremamente attivi durante l'allenamento di slacklining. Precedenti studi hanno mostrato un'attività neuromuscolare potenziata dei muscoli degli arti inferiori (tibiale anteriore, gastrocnemio mediale, retto femorale, bicipite femorale, gluteo medio e adduttore lungo) durante l'allenamento di slacklining⁵. D'altro canto, muscoli come i lombari, gli adduttori e i glutei sono stati indicati raramente

indicated by the participating judoists, which means that they were not as actively involved during slacklining. Finally, abdominals, foot muscles, latisimus dorsi, forearms, pectoralis or deltoids were rarely mentioned and they were linked to specific exercises involving arm support or standing up.

Although the present findings may indicate that slacklining is a relevant cross-training tool for judoists as it improves their postural balance and jump performance, the present study still has limitations. First, the sample size was relatively small. The findings should be tested in larger groups of athletes. Second, participants were under-20 judoists. The effects of this type of exercise should be assessed in different age-groups (children and senior, men and women). Finally, the 4-week intervention period was chosen to compare with previous studies in untrained individuals. As a result, the long-term effects of slackline training remains unexplored.

In conclusion, a 4-week supervised Slackline training program can improve postural control and jump performance in under-20 judoists. It yielded a fairly-light RPE, while Local-RPE showed that calves, hamstrings and quadriceps were the most active muscles. Slackline might be considered a simple and safe training tool for athletes. It could be introduced into the judo training regime without causing overload.

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