

cant gains in vertical jump power. However, other studies have demonstrated that plyometric training for 4 weeks can significantly enhance lower body strength and related performance (Keller et al., 2014; Poomsalood and Pakulanon, 2015). These discrepancies may be because 4 weeks of training represents a threshold period for inducing improvements in lower body power, with variations in training protocols and individual differences influencing the overall outcomes. Additionally, the training volume during the first 4 weeks was lower than 5 - 8 weeks, which could further explain why the 8-week intervention was more effective. It is worth noting that participants maintained their usual exercise habits throughout the study. The impact of these habitual activities on the study outcomes remains unclear.

The findings of this study suggest that both AEL and DJ training are effective in enhancing vertical jump performance and lower body strength after 8 weeks of intervention. Practitioners and coaches aiming to improve vertical jump performance and lower body strength in athletes can implement either AEL or DJ training as part of their plyometric training programs, as both methods yield comparable improvements. However, AEL training may serve as a safer alternative for athletes in the early stages of lower limb injury recovery, as the eccentric load in AEL CMJ tends to be lower than that in DJ, potentially reducing the risk of injury during the recovery phase. Although the current study did not specifically measure eccentric torque, existing evidence suggests that AEL CMJ training could place less stress on the lower limbs, making it a suitable option for athletes needing controlled eccentric loads during rehabilitation. Future research could explore whether combining AEL CMJ and DJ training offers greater benefits than using each method individually.

Several limitations are worth mentioning. First, although this study employed a randomized controlled design, baseline differences in participant characteristics (e.g., baseline strength or jump ability) may have diminished the observed training effects between groups. Second, this study did not include long-term follow-up testing, limiting insights into retention of adaptations. Additionally, this study is the lack of a monitoring process to track the intensity and load throughout the intervention. This prevents a clear understanding of whether the participants received the intended training stimulus at the appropriate level. Despite these factors, the main conclusions regarding immediate intervention effects remain valid.

Conclusion

Eight-week AEL CMJ training and DJ training improved vertical jump performance and lower body strength in physically active individuals, both training methods with similar effects. However, neither training improved acceleration or COD performance, and no significant gains were observed after the first four weeks. Practitioners and coaches aiming to improve vertical jump performance and lower body strength in athletes can implement either AEL or DJ training as part of their plyometric training programs, as both methods yield comparable improvements. Future research could consider combining AEL and DJ training

with other types of SSC exercises to explore complementary methods for optimizing sprint and COD performance.

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Key points

- Eight-week AEL CMJ training and DJ training improved vertical jump performance and lower body strength, both training methods with similar effects.
- Neither 8-week AEL CMJ training and DJ training improved acceleration or COD performance.
- Neither 4-week AEL CMJ training and DJ training improved vertical jump performance, lower body strength, acceleration or COD performance.

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