

Flex Therapist CEUs

Running Considerations with Amputation

Characterizing the Mechanical Properties of Running-Specific Prostheses

1. All of the following are true with regard to RSPs, except for:

- A. They are attached to the sockets that encompass the residual limbs.
 - B. They are in-series with the residual limbs and mimic the mechanical energy storage and return of tendons during ground contact.
 - C. They generate mechanical power anew and return all of the stored elastic energy during running.
 - D. All of the above are true with regard to RSPs.
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2. The data of this study suggest that as athletes exert greater forces on the ground and/or adjust the angle between the peak resultant ground reaction force and their RSP during stance, prosthetic stiffness is altered.

- A. True
 - B. False
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3. Which of the following was responsible for almost half of the dissipated energy?

- A. Rubber soles
 - B. The residual limb / socket interface
 - C. RSP stiffness
 - D. All of the above
-

4. The height of RSPs need to be within a relatively narrow range for athletes with unilateral amputations.

- A. True
 - B. False
-

5. Prosthetic stiffness adjustments would primarily be accomplished by changing:

- A. Stiffness category
 - B. Sagittal plane angle
 - C. Both (A) and (B)
 - D. None of the above
-

6. Prosthetic stiffness varies with the magnitude of applied force.

- A. True**
 - B. False**
-

Effect of Running Speed and Leg Prostheses on Mediolateral Foot Placement and Its Variability

7. Providing external lateral support:

- A. Decreases step width variability.**
 - B. Decreases metabolic cost.**
 - C. Reduces the effort to maintain lateral balance.**
 - D. All of the above.**
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8. All of the following are true with regard to ML foot placement, except for:

- A. ML foot placement variability in sprinters with and without transtibial amputations generally increases with running speed up to maximum sprint speed.**
 - B. ML foot placement variability is symmetrical between the right and left legs of non-amputee sprinters and asymmetrically greater for the affected leg, with an RSP, compared to the unaffected leg of sprinters with a unilateral transtibial amputation.**
 - C. Increases in ML foot placement variability across speed differs between the affected and unaffected leg.**
 - D. All of the above are true with regard to ML foot placement.**
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9. Which of the following tend to show a systematic tendency to place their feet closer to the body's midline as they approach maximum speed?

- A. Non-amputee sprinters**
 - B. Unilateral transtibial amputee sprinters and bilateral transtibial amputee sprinters**
 - C. Non-amputee sprinters and bilateral transtibial amputee sprinters**
 - D. None of the above**
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10. Which of the following exhibited the greatest increases in ML foot placement variability with speed?

- A. Unilateral transtibial amputee sprinters**
 - B. Bilateral transtibial amputee sprinters**
 - C. Non-amputee sprinters**
 - D. Both (A) and (B)**
-

Spatiotemporal Parameters of 100-m Sprint in Different Levels of Sprinters with Unilateral Transtibial Amputation

11. In the present study, average velocity over 100 meters was greatest for:

- A. Elite sprinters**
 - B. Sub-elite sprinters**
 - C. Non-elite sprinters**
 - D. Average velocity was equal for all sprinters**
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12. The average step length was the longest for the non-elite sprinters, compared to the sub-elite and elite sprinters.

- A. True**
 - B. False**
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13. The differences in sprint performance between the elite, sub-elite, and non-elite sprinters is mainly due to the average step frequency rather than the average step length.

- A. True**
 - B. False**
-

Does amputation side influence sprint performances in athletes using running-specific prostheses?

14. It has been demonstrated that during sprinting on a curved track, the inner leg consistently generates smaller peak forces than the outer leg, leading to a reduction of maximum performance of the entire locomotive system.

- A. True**
 - B. False**
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15. This study shows that athletes with left side amputations have slower race times than those with right side amputations.

- A. True**
 - B. False**
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16. The results of the current study suggest that amputation side is a factor that needs

to be taken into consideration to ensure fairness in 200- and 400-m sprint events.

- A. True**
 - B. False**
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