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Three dimensional force analysis of a patient with transfemoral prosthesis

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Background: Prosthetic devices should provide proper alignment of segments and joints for efficient gait. Rehabilitation specialists should carefully assess the best fit of prosthesis for proper force distribution and comfort. The purpose of this paper was to examine the three-dimensional forces of a permanent prosthesis compared with the temporary prosthesis of an amputee during gait.

Case Description: A 58 years old female, transfemoral amputee, who was diagnosed with kidney disease, diabetes and heart disease, consented to be a subject. The patient was tested for three-dimensional forces of gait wearing temporary prosthesis and the same test was performed three months later with a newly designed (permanent) prosthesis.

Results: The results indicated that the patient had increased antero-posterior and push-off forces with the permanent prosthesis. In addition, the medio-lateral forces were reduced which resulted in better balance during gait.

Conclusions: Rehabilitation specialists should fit the prosthetic devices to the patients rather than fitting the patients to the prosthesis. In this study, the force analysis of gait was beneficial in assessing the best fit of prosthesis. Therefore, motion analysis should be performed to observe any deviations in balance, gait and force distribution.

Biography

Anand Shetty is a Professor in the Department of Physical Therapy at the University of St. Mary. He is also the Co-Director of Research in the Department. Currently, he teaches Anatomy, Exercise Physiology and a series of research courses. He has received his Doctoral degree in Physical Education from the University of Northern Colorado. He has published and presented numerous articles on obesity and a frequent invited speaker on obesity and nutrition. He has more than 25 years of teaching and research experience.

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