



## 5.014 Prosthesis Prescription Consensus for Case Patients with Transtibial Bone-Anchored Limbs

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### BACKGROUND

Prosthesis osseointegration is an emerging surgical technique that provides direct skeletal prosthesis attachment to create a bone-anchored limb (BAL). The interfaces between the residual limb and prosthesis differ between socket prostheses and BAL. However, there are no clinical practice guidelines (CPGs) for prosthetic component selection specific to transtibial BALs due to insufficient scientific evidence.

### AIM

We established international consensus amongst 10 worldwide experts for the prescription of prosthetic components for patients with transtibial BALs.

### METHOD

We conducted a three-round Delphi method to establish consensus amongst 10 experts on transtibial BALs. During the first survey round, Delegates were presented with descriptions of 17 case patients and asked to describe their recommended prosthesis prescriptions. From these responses, two evaluators synthesized 16 thematic statements regarding prosthesis prescription recommendations to provide case patients with the best possible prosthetic outcomes. Across two survey rounds, Delegates indicated their level of agreement with these thematic statements and their rationale. Consensus was defined as at least 80% Delegate agreement.

### RESULTS

Over the course of the 3 survey rounds, 13 of the 16 thematic statements pertaining to prescription recommendations for case patients with transtibial BALs achieved expert consensus. General recommendations for prosthetic prescription included (1) a high-energy return carbon fiber or compliant carbon fiber/fiberglass foot with a split toe, (2) torque absorber, and (3) the appropriate safety connector for the osseointegrated implant. There was strong agreement that torsion absorption should be prioritized over shock absorption if build height is a limiting factor, and more general agreement that prescription recommendations should not differ based on sex, gender, age, access to local quality prosthetic care, or presence of osteoarthritis. Delegates were unable to reach consensus on some topics including prosthetic prescription for patients with bilateral amputation or lower activity levels.

### DISCUSSION AND CONCLUSION

Despite the higher incidence of transtibial amputation, BALs are less common for transtibial than transfemoral amputation. Thus, fewer clinician-patient relationships exist to draw consensus from on BAL prosthesis prescription. Our findings show agreement on general recommendations for transtibial BAL prosthetic prescription, but also illuminate several areas of uncertainty amongst experts. Given increasing interest in BALs, this consensus both summarizes the current state of expert opinion based on Delegates' extensive experience and provides a basis for future clinical practice guidelines by identifying knowledge gaps for future research studies.

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