5.505 Phantom Limb, Residual Limb, and Bodily Pains in Persons with Unilateral Lower Limb Amputation

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BACKGROUND
Pain is common for individuals with major lower-limb amputation and can include primary post-amputation pain such as phantom limb or localized limb pain, as well as secondary bodily pain felt in locations beyond the residual limb. However, pain surveys typically do not differentiate between these different pain subtypes or their underlying characteristics, leaving the relationships between non-specific generalized and individual pain subtypes unclear. Overall, this leads to a lack of clinically relevant data to diagnose and treat patients' pain.

AIM
We characterized the current and recalled pain experiences of 59 individuals with unilateral transfemoral or transtibial amputation, differentiating between pain in the phantom limb, residual limb, and other parts of the body.

METHOD
We developed a pain survey characterizing post-amputation pain location, intensity, fluctuation, and duration, focusing on current pain and pain averaged over the past month, for generalized pain, phantom limb pain, residual limb pain, and bodily pain. We identified the strongest predictors of overall pain by means of multiple linear regression analysis. Variability in patterns of participant responses were characterized by identifying principal components between phantom limb pain, residual limb pain, and bodily pain. We also characterized these pains during rest, while performing light activities, and during maximum effort.

RESULTS
59 (16 female) participants completed the survey, of whom 30 had transfemoral and 29 had transtibial unilateral amputation (13.3±15.0 years prior). 30 individuals reported phantom limb pain, 39 reported residual limb pain, and 36 reported bodily pain. Residual limb pain most strongly predicted current generalized pain (p<0.001), and both residual limb and bodily pain predicted recalled generalized pain (p<0.05). Up to 28% of variability in pain was unaccounted for by primary principal components between pain subtypes describing typical patterns of experienced pain. All pain subtypes except for phantom limb pain (p=0.371) were higher during light activity compared to while at rest (p<0.001).

DISCUSSION AND CONCLUSION
While the experiences of phantom limb, residual limb, and bodily pain were generally correlated with each other, relying on a single overall pain outcome was insufficient to accurately describe a patient's pain experience. Meaningful differences in pain experience were found in the unaccounted variability between pain subtypes which may carry clinical importance. We instead propose that phantom limb, residual limb, and bodily pain should be evaluated simultaneously to capture a complete and holistic snapshot of post-amputation pain.

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