INTRODUCTION
For upper extremity amputees, the primary losses associated with the immediate functional and emotional consequences of the lost extremity are profound. However, there are several associated co-morbidities that often constitute additional challenges to this patient population. These may include phantom sensations and phantom pain, residual limb pain, additional pain and overuse symptoms affecting the neck, shoulders, back and sound side limb, elevated rates of anxiety and depression and a compromised quality of life. A literature review was undertaken to quantify the reported severity and prevalence of these additional challenges among those with upper limb loss.

METHOD
Literature searches were undertaken to answer the following clinically relevant questions:

- What is the prevalence of reported phantom sensation, phantom pain and residual limb pain among patients who have experienced upper limb amputation?
- What is the prevalence and location of reported pain symptoms and overuse syndromes in the non-amputated upper extremity and trunk of patients who have experience upper limb amputation?
- Do upper extremity amputees report increases in symptoms of anxiety and/or depression relative to the general population?
- Do patients who have experienced upper limb amputation report a decreased quality of life relative to the general population?

RESULTS
In recent literature, the overall prevalence of pain among upper extremity amputees has been reported as high as 90% (Hanley, 2009). Among the various pain symptoms, phantom pain is the most frequently reported at 60-79%. However, non-painful phantom sensations can be reported even more frequently, ranging from 57-81%. The next most frequently reported pain type is residual limb pain, ranging from 48-74% (Datta 2004, Hanley, 2009 Desmond, 2010). Because of the frequency of overlap between the two pain types, there is speculation that phantom pain and residual limb pain may be intertwined, with the latter triggering the former or because of an inability of upper extremity amputees to differentiate between the two.

Back and neck pain are reported by roughly 50% of upper extremity amputees. Additionally, pain in the sound side limb, including the shoulder, elbow, wrist and hand, has been cited by roughly a third of pain survey participants (Hanley 2009, Datta 2004). Half of surveyed respondents report problems with the remaining upper extremity, including epicondylitis, shoulder impingement, tenosynovitis, osteoarthritis, repetitive strain injuries and carpal tunnel syndrome (Jones 1999). Additional reports of sound side hand problems and carpal tunnel symptoms are supported by more recent literature (Datta 2004, Dudkiewicz, 2004).

Elevated risks of clinical depression have been found among nearly one-third of upper limb amputees, a prevalence nearly three times higher than those reported by a sampling of the general population (Darnall 2005, Desmond 2007). Upper limb amputees report lower satisfaction with life scores than those observed within the general population (Ostlie 2010). Pain symptoms, over-use injuries, and changes in vocation appear to negatively affect satisfaction with life values (Hanely 2009, Ostlie 2010).

CONCLUSION
Recent literature findings suggest that upper limb amputee will often contend with secondary pain complications including phantom pains and sensations and pain in the residual limb. Reports of pain in the back, shoulders, neck and remaining upper extremity, along with over-use injuries in the remaining extremity are commonly reported. Further, this population appears to be at an increased risk for clinical depression and reduced life satisfaction values.

REFERENCES
Jones LE and Davidson JH. Prosth Orthot Int. 1999;3:55-8
Ostlie K et al. Disabil Rehabil 2010;33:1594-607.