

# An Investigation into the Feasibility of a Non-Invasive, Automated Compartment Syndrome Detection Device

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## Introduction

Compartment syndrome is a complication associated with the treatment of tibial fractures. If left untreated it can have life changing effects for both the patient and the clinician.

For the patient intervention can result in a large scar as a result of the fasciotomy required to relieve the compartment pressure. But if left untreated (or undiagnosed) the compartmental pressure can result in necrosis of the muscle, and this could lead to amputation of the limb.

For the clinician, not diagnosing compartment syndrome, or diagnosing it late, can lead to litigation. Whilst the experienced clinician can diagnose compartment syndrome with relative ease, a junior, or less experienced, doctor (who may not have seen one before) may miss the signs and detection may be too late to save the muscle in the compartment.

Hence this study was to examine viable solutions for an automated system.

## Materials & Methods

A design study was conducted to develop the design specification for such a device, and to then use this PDS to examine possible solutions.

## Conclusions

A product design specification was developed and a range of solutions was investigated. A number of front runners were then subjected to a more rigorous analysis. A feasible solution has been developed and is presented.

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