INFLUENCE OF DIFFERENT MATERIALS IN MULTI-COMPONENT BANDAGES ON PRESSURE AND STIFFNESS OF THE FINAL BANDAGE

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Aim: To investigate if and how much pressure and stiffness of some widely used multicomponent, multilayer bandages change after modifications of their components.

Methods: 12 healthy volunteers were investigated. Interface pressure and stiffness (calculating SSI and mSSI) were assessed in the lying and standing position after application of a long stretch multilayer compression system*, a long stretch 2-layer compression system**, and a short stretch multilayer compression system***; The long stretch 2-layer compression system** and the short stretch multilayer compression system*** were then modified; The long stretch 2-layer compression system** was applied adding an Ideal Binde in between the cotton wool and the outer elastic layer and also replacing the cotton wool padding with a non-slip padding****; The short stretch multilayer compression system*** was modified replacing the non-slip padding**** with cotton wool.

Results: SSI and mSSI of the long stretch multilayer compression system*, made up of elastic component, are in a grey zone between elastic and inelastic materials. Both the long stretch multilayer compression system*, made up of elastic components, and the short stretch multilayer compression system***, made up of inelastic components, are in the range of inelastic bandages. Changing padding layers can completely change interface pressure and stiffness of these bandages: The long stretch 2-layer compression system** falls in the range of elastic bandages or becomes completely inelastic; The short stretch multilayer compression system*** increases its stiffness significantly.

Conclusion: pressure and stiffness of the bandage kits can be different from what expected if we consider the physical properties of their single components. The properties of the final bandage can completely change by modifying the padding layers.

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