

Comfort Properties of Flexible Body Armor Fabrics and Panels

Introduction:

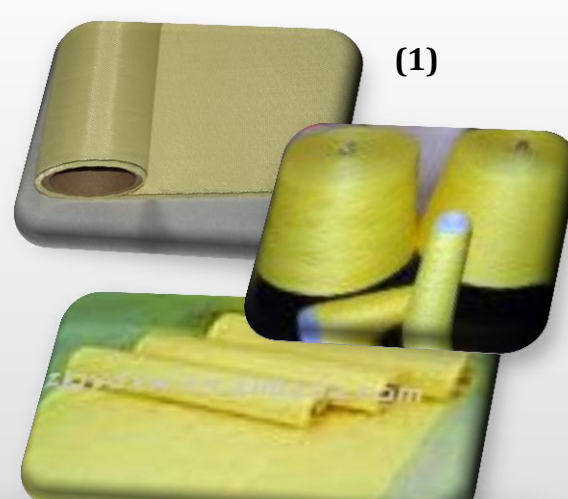
Protective articles are heavy, bulky, inflexible, and uncomfortable to wear, especially in hot-humid climates. It is important to understand the protective fabric comfort properties and considerer the garment comfort factor during body armor design.



Methods

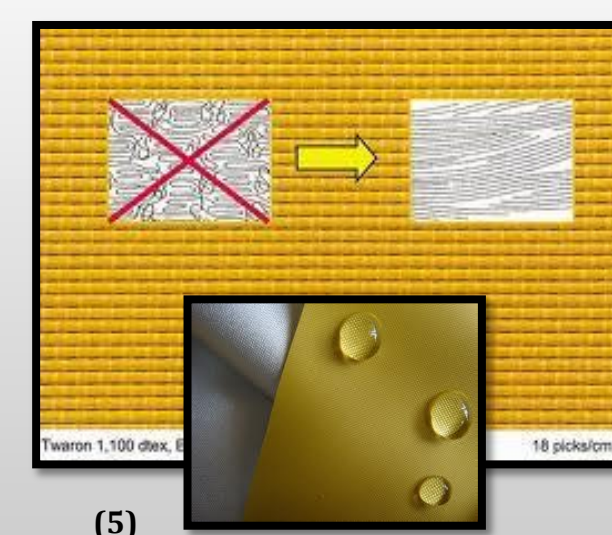
❑ Testing ballistic Kevlar/wool fabrics for comfort:

The comfort of new ballistic Kevlar/wool fabrics will be tested and evaluated against the current 100% ballistic Kevlar fabric.



❑ Coating ballistic fabrics & panel

Coating body armor panel with abrasive particles to enhance ballistic protection and comfort.



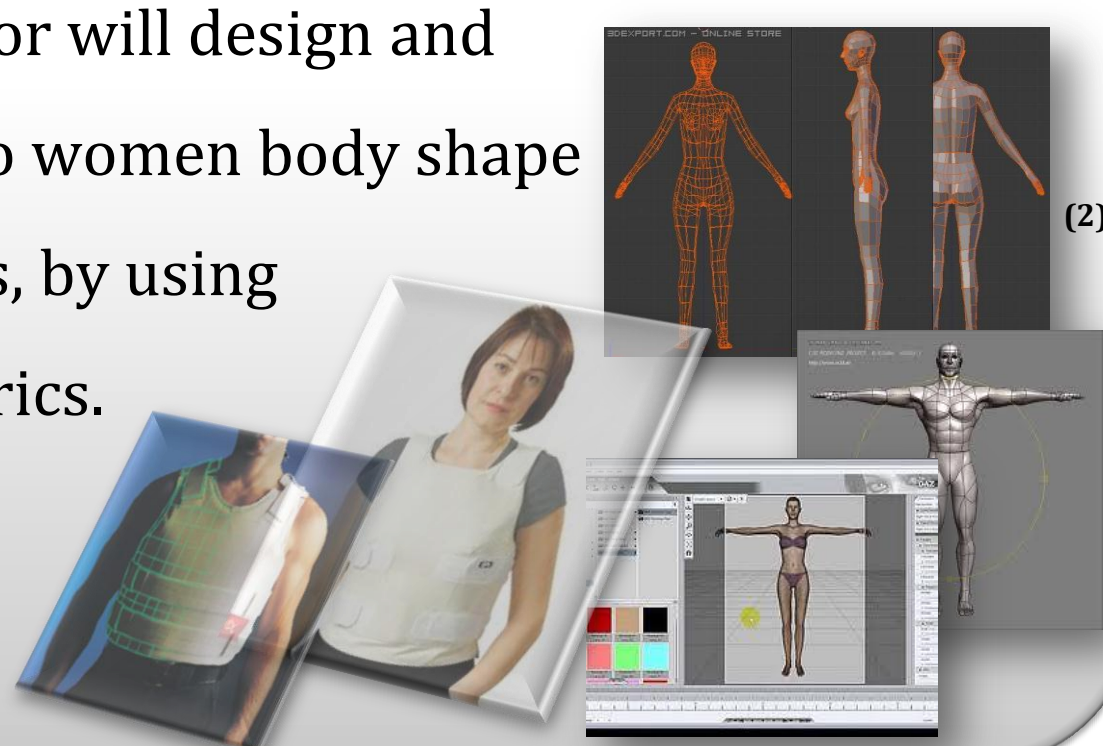
❑ Ballistic tests then will apply to evaluate the ballistic protection:

Multilayer flexible stab and ballistic resistant panels will be assembled to assess whether layering combinations improve their effectiveness, and to what extent.



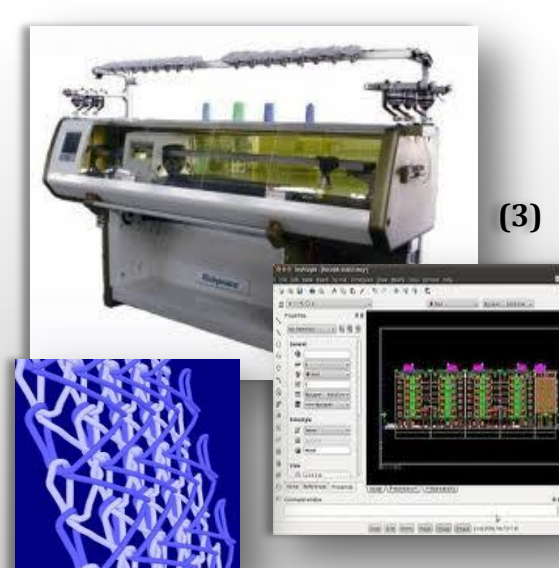
❑ Engineering and assessing 3D female body armors:

The female body armor will design and Knitting in respects to women body shape in 3D seamless panels, by using new Kevlar/wool fabrics.



❑ Producing tight knitted structures using Kevlar and ballistic nylon yarns:

Design and engineer stab and ballistic resistant fabrics, and examines their performance for protection and comfort.



Expected outcome

The results of this research will provide a good reference for designing and engineering female body armors capable of resisting bullets and sharp objects penetration, as well as developing improved comfort performance.