

## **Innovating new weaving structural components to create woven jacquard sports footwear fabrics**

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### **Abstract:**

This study aims to Produce jacquard woven fabrics using innovative textile structures components adequate for woven sports footwear fabrics that compete with similar ones produced from knitted fabrics in terms of cost and physical and mechanical properties such as comfort and durability of the sports footwear. Hence, this study represents (4) samples produced from (Polyester filament, chenille P.E., chenille P.E. (micro flat), and polyester spun by using double weave wadding structure techniques depending on some different structural components such as weft density/inch, end density/inch and their sequences. The results of statistical analysis for correlation coefficients show that the different structural components of the woven jacquard sports footwear fabrics have a strong correlation that affects the functional performance properties such as tensile strength, elongation, pilling, friction resistance, and air permeability in addition to reducing the production cost, which reflects positively on the annual expenditure of foreign currency required to meet the market's need for sports footwear fabrics. Every day, individuals wear sports footwear, a vital and indispensable item. Sports footwear offers comfort to the wearer while safeguarding their feet from challenging conditions like cold, wet, and rugged surfaces. Footwear fabrics are a very important part of sports footwear; however, they directly affect durability and comfort. Two types of machines cover the Egyptian market for this kind of fabric; the first is circular jacquard knitting machines, which are not available in the Egyptian market, so foreign countries cover the market demand and cost the government a large budget from the foreign currency. The other one is the flat knit machine, which is a low production rate machine and can only cover some of the market demand for sports footwear fabric, so the materials produced on those machines are expensive. This study aims to produce jacquard woven fabrics using innovative textile structure components adequate for sports footwear fabrics to compete with similar ones produced from knitted fabrics in terms of cost and physical and mechanical properties, such as increasing the comfort and durability of the sports footwear.

### **Keywords:**

Weaving Structure; Woven Jacquard; Knitting Sports Footwear Fabrics

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