

PRODUCT INFORMATION FOR MULTIPURPOSE LOAD CARRIAGE ENSEMBLE

Problem Identified:

Existing load carriage ensemble is not ergonomically designed in terms of sizes, biomechanical and physiological parameters and their impact on musculoskeletal health. Load carriage during military operations/school children is gradually increasing due to their increased curriculum. Weight and mode of carrying the Rucksack influence the health of due to postural deviations.

Ideally, load carriage should not be more than 10-15% of the body weight. However, carry 20-30% of their body weight. Carrying load in a poorly designed bag adds undue stress on the musculoskeletal system/ spinal column which leads to risk of musculoskeletal disorders.

Innovative approach to solve the problem:

The Multipurpose Load Carriage Ensemble (initially conceived for school children) is developed based on Ergonomic principles (load distributed in front and back, considering biomechanical and postural parameters and sizes) which is modular, lightweight, multiple pockets, horizontally and vertically adjustability features at waist strap for different height of users, attachment /detachment facility for using as single pack as well as double pack as per requirements/ choice. Sufficient volume and design features for placement of items. Effective designing required to improve musculoskeletal health of students.

Potential Benefits of the new invention:

- ✓ Designed based on principles of ergonomics
- ✓ Efficient in terms of postural and biomechanical load while standing/walking
- ✓ Reducing postural strain due to distribution of load
- ✓ Help to maintain normal spinal lordosis and kyphosis during standing and walking
- ✓ Reduces the magnitudes of work done and power generation in lower body joints
- ✓ Minimizes the risk of spinal deformities, back pain, musculoskeletal disorders enhance comfort/safety

