Abstract

Background:- Postural control, a critical aspect of maintaining balance and stability, is influenced by various muscular systems, especially the deep stabilizing muscles such as the transverse abdominis (TrA) and multifidus. The TrA, a core stabilizer, works to provide intraabdominal pressure and spinal stability, while the multifidus contributes to the segmental stability of the spine. Individuals with different body types, as classified by somatotypes, exhibit varying muscle distribution and endurance capabilities. Ectomosrphic individuals may experience distinct challenges related to endurance and muscular activation patterns in postural control compared to individuals with other body types(3) . By exploring the relationship between somatotype, muscle endurance, and postural control, this research seeks to contribute valuable knowledge to the fields of biomechanics, sports science, and rehabilitation . Understanding the specific endurance capabilities of the TrA and Multifidus muscles in ectomorphic individuals could lead to tailored interventions and training strategies that enhance postural control and overall functional performance for this particular population.

Objectives:- :- The objectives of this study is evaluate and compare the endurance capability of the Transverse Abdominis and Multifidus muscles in individuals with an ectomorphic body type, in order to determine potential deficits or variations in core muscle endurance associated with this somatotypes.

Material and Method:- A Cross-sectional study was conducted with 27 participants aged 18-25, selected via random sampling based on specific inclusion and exclusion criteria. Participants with ectomorphic bodytype were included in this study. Assessing their body type by BMI. Endurance Capability of Transverse abdominis and Multifidus was checked by Pressure Biofeedback. Recorded the time of the muscle acti vation .Data were analysed using descriptive statistics.

Result:- The study involved 27 University students with ectomorphic body type . Result showed that Multifidus endurance (9.22 seconds) was slightly better than Transverse Abdominis (8.48 seconds). Transverse Abdominis generated higher pressure (around 59 mmHg) compared to Multifidus (around 51 mmHg), but its endurance was a bit less. There was a lot of variation in how much pressure the Multifidus could hold, suggesting differences in individual muscle strength and control. Some participants had difficulty maintaining the pressure, because their muscles were not strong or well-developed, which is expected in ectomorphic individuals who naturally have less muscle mass.

Conclusion:- The study concluded that individuals with an ectomorphic body type show moderate endurance in both the Transverse Abdominis (TrA) and Multifidus (MF) muscles. Among the two, the Multifidus had slightly better endurance, while the Transverse Abdominis generated more pressure. However, both muscles showed inconsistent endurance and pressure capacity, which could impact spinal stability.This highlights the need for body-type-specific training, especially for ectomorphs, to improve core strength and prevent posture-related issues. The research supports the idea that early, tailored interventions in physiotherapy can help reduce the risk of core dysfunctions in lean individuals.

Keywords:- Ectomorphic bodytype Endurance capability, PressureBiofeedback, Transverse Abdominis , Multifidus Muscle.

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