ORIGINAL RESEARCH

42. Association Between the Presence of Palmaris Longus Muscle and Handwriting Performance in Medical Students: A Cross-Sectional Study

Anshika Gandhi[1], Dr Priti Chaudhary[1], Seerat Kular[1], Anirudh[1], Saransh Gupta[1], Dr. Apurba Patra[1]

[1] All India Institute of Medical Sciences, Bathinda, Punjab

https://www.youtube.com/watch?v=4rJ3DHWeKRs&list=PLhqNq3xJClbafO0Y5bvBcgMmXpgzJxd44&index=6&t=5612s

Background: The Palmaris Longus (PL) is a superficial muscle of the anterior compartment of forearm, contributing to wrist flexion but considered functionally dispensable. Anatomically, it shows significant variability, with agenesis reported in 1.5–63.9% of individuals worldwide. The functional significance of the PL has been studied primarily in sports; however, limited research has examined the role of PL in fine motor tasks, particularly handwriting, which demands both wrist stability and precise motor control. Given the PL's contribution to wrist flexion and hand stabilisation, its absence may influence handwriting. With this background, this study was focused to assess the prevalence of the PL in North Indian medical students, analyze its variation with respect to laterality and gender and determine any possible association between the presence of the PL and handwriting performance. Understanding these relationships could provide insight into the functional relevance of the PL in fine motor activities and contribute to anatomical and clinical knowledge in the population studied.

Methods: A cross-sectional observational study was conducted over two months among 200 first- and second-year MBBS students aged 18–25 years at AIIMS Bathinda. The presence of the PL muscle was assessed using Schaeffer's, Pushpakumar's, and Mishra's tests. Handwriting performance was evaluated with the validated Handwriting Assessment Battery for Adults, which included dot writing, horizontal line drawing, and numeral writing, scored for speed, accuracy, and legibility. Descriptive statistics were computed, and associations were analyzed using regression models (negative-binomial, Poisson, and linear), adjusting for sex, handedness, and PL laterality. A p-value <0.05 was considered statistically significant.

Results: Most participants were right-handed (189/200, 94.5%). PL absence was uncommon (11/200, 5.5%) and more frequent in females (7/73, 9.6%) than males (4/127, 3.1%). Dominant-hand PL was significantly more common in males (122/127, 96.1%) than females (60/73, 82.2%; p = 0.0016). Horizontal line scores were lower in males (IRR 0.85, 95% CI 0.76–0.96, p = 0.008) and in participants with dominant-hand PL (IRR 0.48, 95% CI 0.24–0.99, p = 0.046), but higher in right-handers (IRR 1.82, 95% CI 1.28–2.58, p = 0.0009). Dot-writing scores were not significantly associated with handedness or dominant-hand PL (IRR 0.52, 95% CI 0.08–3.22, p = 0.478). Numeral-writing scores also showed no statistically significant variation with PL presence.

Conclusion: The findings of our study suggest that the PL muscle has minimal functional impact on fine motor tasks such as handwriting. Future studies with larger and more heterogeneous populations are needed to validate these findings and to investigate potential subtle functional effects.

ISSN 2076-6327

This journal is published by Pitt Open Library Publishing