Practitioners who use osteopathic manipulative treatment (OMT) rely on their hands to diagnose and treat patients. While the general population’s hand functionality declines with age, OMT practitioners seem to maintain hand strength and function as they age. Due to the nature of medical practice, hand function decline could be detrimental to the longevity of physicians’ careers and ultimately their livelihood. Reduced hand function, as demonstrated through grip strength testing, has been used as a predictive predictor of cardiovascular and respiratory disease, cancer, and stroke in middle-aged and elderly persons. While age and grip strength have also been shown to predict hand dexterity in adults, studies show that skilled finger movement training can improve or maintain an aging population’s hand functionality.

**OBJECTIVES**

We hypothesized that OMT practitioners’ grip strengths are maintained/improved versus non-OMT practitioners of the same gender and age despite increasing age. There is scarce research on how OMT affects practitioners. The purpose of this cross-sectional pilot study was to assess OMT practitioners’ hand functionality by measuring intrinsic and extrinsic grip strength via a pinch gauge and Jamar dynamometer, respectively, and comparing it to published gender- and age-matched normative data. In doing so, we aim to demonstrate the potential physician benefits of performing OMT.

**METHODS**

264 OMT practitioners enrolled in this ongoing study over two years (90 and 174 OMT practitioners at American Osteopathic Academy of Osteopathy’s (AAO) 2017 and 2018 Convocations, respectively).

1. The subject self-reported demographic data via Qualtrics: age, gender, height, weight, BMI, dominant hand, previous injury to hands, duration of practicing OMT, and the average number of hours of OMT per week in past 6 months/over the course of his or her career.

2. The investigator measured the subject’s intrinsic grip strength with a mechanical pinch gauge (Fig. 2A). The subject was instructed on proper use of a pinch gauge. Feet remained flat on the floor. The pinch gauge was held by the investigator in front of the subject, who was allowed to perform one practice trial on the device with each hand. With the elbow flexed to 90° at his or her side, the subject was asked to provide three consecutive maximum key pinches with the right hand in a three-jaw chuck hand position (Figure 2B). Investigators recorded the subject’s values into Qualtrics. The process was then repeated for the left hand.

3. The investigator measured the subject’s extrinsic grip strength with a Jamar dynamometer (Figure 2C). Continuing to sit in the aforementioned position, the subject was instructed on proper use of a Jamar dynamometer and allowed to perform one practice trial on the device with each hand. With the elbow flexed to 90° at his or her side, the subject was handed the Jamar dynamometer and asked to provide three consecutive maximum grip strengths with the right hand. Investigators recorded the subject’s values into Qualtrics. The process was then repeated for the left hand.

**RESULTS**

**POWER ANALYSIS**

Based on the results from this pilot study, the sample sizes are calculated based on partial F-test assuming 5 covariates; for example, age, gender, height, weight, and length of OMT practice. According to Cohen’s conventional small, medium, and large effect sizes, the sample sizes needed to reach 80% power are 399, 59, and 29, respectively. The effect sizes in the power analysis will be achieved through brand new data collection in a follow-up study.

**CONCLUSION**

OMT practitioners’ grip strength decline is calculated at ~1.0 pounding over 5 years (lb/5y) for females and ~1.9 lb/5y for males. Their decline rate was less than published normative data (females -2.4 lb/5y, males -4.2 lb/5y), as shown in Figures 3 and 4. The grip strength results suggest that practitioners who use OMT slow the rate of decline of their hand function as they age rather than experience the more rapid decline seen in the general population. The data for grip strength was inconclusive and not included here. This pilot study may suggest that practicing OMT may have a more significant effect on extrinsic muscle strength than intrinsic muscle strength in terms of preserving hand function. The results serve as the first database of grip strength normative data not just for OMT practitioners, but physicians overall.

One notable limitation is the demographic differences between this study’s population and the normative data (3317 subjects, 12 studies, 5 countries). In the next phase of data collection, we plan to investigate participants’ hand usage outside of OMT practice, what types of OMT they are utilizing, if practitioners have ever injured their hands while performing OMT, and if they have previously completed the study. Because we did not ask about previous participation, the pilot study was finalized in 2018. Future research will include a follow-up question in the survey that allows for continuously tracking previous participants in order to reduce recall bias.

**ACKNOWLEDGEMENTS**

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**REFERENCES**

**INTRODUCTION**

Practitioners who use osteopathic manipulative treatment (OMT) rely on their hands to diagnose and treat patients. While the general population’s hand functionality declines with age, OMT practitioners seem to maintain hand strength and function as they age. Due to the nature of medical practice, hand function decline could be detrimental to the longevity of physicians’ careers and ultimately their livelihood. Reduced hand function, as demonstrated through grip strength testing, has been used as a predictive predictor of cardiovascular and respiratory disease, cancer, and stroke in middle-aged and elderly persons. While age and grip strength have also been shown to predict hand dexterity in adults, studies show that skilled finger movement training can improve or maintain an aging population’s hand functionality.

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