The use of exercise prescription in Australian osteopathy practice: secondary analysis of a nationally representative sample of the profession

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Abstract

Introduction: Exercise is beneficial for improving general health, wellbeing and specific medical conditions. In musculoskeletal conditions such as chronic low back and neck pain, prescribed exercise has been found to be moderately effective in decreasing pain and improving function. Osteopaths are primary contact health professionals who manage predominantly musculoskeletal complaints. This work presents a secondary data analysis of the Australian osteopathy practice-based research network and profiles the characteristics of osteopaths who often use exercise prescription in patient care. Methodology: Secondary analysis of a cross-sectional survey of 992 osteopaths registered with the Osteopathy Research and Innovation Network, an Australian practice-based research network. Demographic, practice and treatment characteristics of Australian osteopaths who 'often' use exercise prescription in patient care were examined. Results: Seven-hundred and thirty-three Australian osteopaths (74%) indicated they use exercise prescription 'often' in patient care. Australian osteopaths who often use exercise prescription are more likely to be co-located with another osteopath (ORa 1.54), and send referrals to an exercise physiologist; (ORa 1.94). Those osteopaths who often use exercise prescription were also more likely to discuss physical activity (ORa 5.61), and nutrition (ORa 1.90). Australian osteopaths who use exercise prescription often were more likely to treat patients with sports injuries (ORa 2.43), and use soft tissue techniques (ORa 1.92), trigger point techniques (ORa 2.72) and sports taping (ORa 1.78). Conclusion: Osteopaths who utilise exercise prescription were more likely to discuss physical activity, diet and nutrition, and utilise referral networks with specialist medical practitioners and exercise physiologists. Australian osteopaths who often use exercise prescription were also more likely to treat sport injury patients. The results support the conclusion that Australian osteopaths use exercise prescription and have referral networks with other health professionals for patient management. Further work is required to explore the type of exercise prescription used and for what conditions.

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Running Title:

Exercise prescription use by Australian osteopaths

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Methodology:

Secondary analysis of a cross-sectional survey of 992 osteopaths registered with the Osteopathy Research and Innovation Network, an Australian practice-based research network. Demographic, practice and treatment characteristics of Australian osteopaths who 'often' use exercise prescription in patient care were examined.

Results:

Seven-hundred and thirty-three Australian osteopaths (74%) indicated they use exercise prescription 'often' in patient care. Australian osteopaths who often use exercise prescription are more likely to be co-located with another osteopath (ORa 1.54), and send referrals to an exercise physiologist; (ORa 1.94). Those osteopaths who often use exercise prescription were also more likely to discuss physical activity (ORa 5.61), and nutrition (ORa 1.90). Australian osteopaths who use exercise prescription often were more likely to treat patients with sports injuries (ORa 2.43), and use soft tissue techniques (ORa 1.92), trigger point techniques (ORa 2.72) and sports taping (ORa 1.78).

Conclusion:

Osteopaths who utilise exercise prescription were more likely to discuss physical activity, diet and nutrition, and utilise referral networks with specialist medical practitioners and exercise physiologists. Australian osteopaths who often use exercise prescription were also more likely to treat sport injury patients. The results support the conclusion that Australian osteopaths use exercise prescription and have referral networks with other health professionals for patient management. Further work is required to explore the type of exercise prescription used and for what conditions.

Keywords

Evidence-based medicine; practical reasoning; public health; medical education; healthcare; health services research

Introduction

Research highlights many benefits of exercise including improving general health, wellbeing and specific medical conditions such as stroke and osteoporosis.[1] In musculoskeletal conditions such as chronic low back

pain (LBP) and neck pain, prescribed exercise has been demonstrated to be moderately effective in decreasing pain and improving function.[2,3] Moreover, prescribing exercise as part of the management for musculoskeletal conditions is strongly encouraged in clinical practice guidelines.[4-7]

Exercise prescription is frequently used by allied health professionals with the aim of improving physiological well-being, functional ability, capacity, mobility and pain relief. [8,9] These allied healthcare professions include physiotherapy [10], chiropractic [10,11], occupational therapy[12], and osteopathy.[13] The type of exercise prescription provided typically includes: activity recommendations; progressive general exercise; more specific exercise interventions including stretching; range of motion activities and; stabilisation exercises to specific body regions.[14]

Osteopaths are primary contact health professionals who manage predominantly musculoskeletal complaints.[15]Orrock[16] explored osteopathic practice in Australia in 2009 and found approximately 55% of practitioners often or always prescribe therapeutic exercise. In 2018, Adams, Sibbritt, Steel, Peng[15] reported 74% of Australian osteopaths utilise exercise prescription, as do 78% of New Zealand osteopaths. Data from the United Kingdom (UK) shows approximately 23% of osteopaths used exercise prescription as part of their patient management.[17] In contrast, a cross sectional study of Australian osteopaths in 2013, reported approximately 6% only of patient records examined in 2011 and 2012 contained a form of exercise prescription.[18] Several case studies have also reported osteopaths prescribing exercise as a form of therapy.[19-21] The use of exercise outside the immediate osteopathy practice environment has also been investigated with home exercise programmes featuring in various manual therapy research.[22] This is limited higher quality research about the use of exercise prescription in osteopathy in the literature, suggesting further research is needed to effectively capture the use of exercise prescription in osteopathic practice. Our work presents a secondary data analysis of the Australian osteopathy practice-based research network [15,23] to profile the characteristics of osteopaths who use exercise prescription often in patient care.

Methods

Participants

Ethics approval for the data collection was granted by the University of Technology, Sydney, and Human Ethics Committee (# 2014000759). The Australian Osteopathy Practice Based Research Network (PBRN) as part of the Osteopathy Research and Innovation Network (ORION) project[15] was used to recruit participants from July to December 2016. Potential participants were required to be a registered osteopath at the time of data collection. Participants who consented were invited to complete an online questionnaire (Supplementary File 2). Responses to the ORION questionnaire were received from 992 osteopaths – a 49.1% response rate. Adams and colleagues[15] report the respondents to be nationally-representative of the Australian osteopathy profession at the time of data collection.

Questionnaire

A 27-item questionnaire was developed to collect data from the PRBN participants using dichotomous, frequency and Likert-type responses.[15] The questionnaire invited participants to provide data on individual practitioner demographics (i.e. age, gender, and number of years in private osteopathy practice), participants' practice characteristics (i.e. patient care hours and patient visits per week, practice location and interactions with other health professionals either through co-location or referrals), and patient management (i.e. body regions treated, manual therapy technique use, advice to patients). Additional items also explored practitioner opinion on expanded practice rights and use of research in osteopathy practice. Patient management characteristics included frequency of patient presentations, discussion of lifestyle behaviors, frequency of treating specific patient groups, and frequency of osteopathy technique use.

Outcome variable and exposure variables

Participants were asked to indicate their frequency of use of exercise prescription in patient care ('never', 'rarely', 'sometimes', and 'often') – the outcome variable. The outcome variable was dichotomized to 'not often' (combining never, rarely and sometimes) or 'often'[24]. The exposure variables were the practitioner

and practice characteristics described in the Questionnaire section above. Variables with frequency or Likert-type responses were dichotomized for the analysis (*often* and *not often* ('never', 'rarely', 'sometimes') and attitude (*definitely* and *not definitely*('no', 'unsure', 'maybe')). Age, average patient numbers per week, average patient care hours per week and years in clinical practice were analysed as continuous variables. All other variables included in our analysis are reported in binary form (yes/no).

Statistical analyses

Analyses were performed using SPSS (version 25). Descriptive statistics were generated for each variable on the questionnaire. Inferential statistics were used to explore association between the outcome variable and dichotomised variables. Alpha was set at $p<0.05$ and unadjusted odds ratios ORc (with 95% confidence intervals) calculated where significant. Continuous data were analysed using independent measures t-tests with alpha set at $p<0.05$ and effects sizes (Cohen's d) calculated where significant. Variables with $p<0.20$ were entered into a binary logistic regression analysis. Backward elimination was used to determine the important predictors of osteopaths who 'often' use exercise prescription.[15] Adjusted odds ratios (ORa) with 95% confidence intervals (CI) and p-values were calculated from this regression modelling. Variables were significantly associated with the outcome variable at $p<0.05$.

Results

Seven-hundred and thirty-three Australian osteopaths (73.9%) indicated they use exercise prescription 'often' in patient care. There was no statistically significant difference of gender for Australian osteopaths who use exercise prescription often compared to osteopaths who do not use it often ($p>0.05$) (Table 1). Australian osteopaths who often use exercise prescription were younger in both age and time in practice ($p<0.05$), and reported a higher number of patient visits and care hours per week ($p<0.05$) all with small to medium effect sizes. Those Australian osteopaths with a postgraduate qualification, and those who reported being a member of Sports Medicine Australia were also more likely to use exercise prescription often, compared to those who did not report these characteristics (Table 1).

Insert table 1

For patient assessment, Australian osteopaths who use exercise prescription often were more than twice as likely to refer for diagnostic imaging, and six times more likely to use orthopaedic assessment in patient examination, compared to those who do not often use exercise prescription (Table 2). Australian osteopaths who often use exercise prescription were approximately 50% more likely to be co-located with other osteopaths (ORc 1.48) and nearly twice as likely to send referrals to exercise physiologists (ORc 1.90) (Supplementary File 1).

Insert table 2

Australian osteopaths who often use exercise prescription in patient care were more than eight times as likely to discuss physical activity with their patients, compared to osteopaths who do not often use exercise prescription (Table 3). Medication and occupational health and safety were more than twice as likely to be discussed with patients by osteopaths who reported use of exercise prescription often in patient care (Table 3). Australian osteopaths who often use exercise prescription were almost twice to discuss a range of other clinical management strategies with patients compared to osteopaths who do not often use exercise prescription (Table 3).

Osteopaths who often use exercise prescription were more than twice as likely to treat postural disorders (ORc 2.13) and tendinopathies (ORc 2.28) and, compared to those who do not often use exercise prescription in patient care (Supplementary File 1). Australian osteopaths who often use exercise prescription were three times more likely to treat patients with sport injuries (ORc 3.37), and twice as likely to report treating compensable work injury patients (ORc 2.40) (Supplementary File 1).

Osteopaths who often use exercise prescription were more than twice as likely to use muscle energy technique and dry needling, and three times more likely to more than 3x more likely to use soft tissue technique and

trigger point therapy (Table 3). Those osteopaths who often use exercise prescription were also nearly six times more likely to use sports taping compared to colleagues who do not often use exercise prescription (Table 3). However, osteopaths who often use exercise prescription were less likely to use autonomic balancing, balanced ligamentous tension, biodynamics, and Osteopathy in the Cranial Field techniques in patient care (Table 3).

Australian osteopaths who often use exercise prescription in patient care were nearly twice as likely to indicate expanded practice with respect to prescribing rights (ORc 1.92) and twice as likely to seek expanded referral rights to Sports Medicine specialists (ORc 2.37) (Supplementary File 1).

Insert table 3

Adjusted odds ratios (ORa) for variables that were identified as being statistically significant in the backward binary logistic regression model are described in Table 4. Australian osteopaths who often use exercise prescription were over five times more likely to discuss physical activity with patients, compared to those who do not often use exercise prescription in patient care.

Insert table 4

Discussion

Our secondary analysis of the Australian osteopathy PBRN data provides a novel insight into the practice characteristics of practitioners who often use exercise prescription as part of the care of patients with musculoskeletal complaints. Approximately three-quarters of Australian osteopaths often prescribe exercise in patient care. This finding is consistent with previous data for New Zealand osteopaths[23] suggesting that exercise prescription is a significant component of Australasian osteopathy practice.

Our data shows Australian osteopaths who often use exercise prescription are also more likely to engage in referrals with a number of health professionals. Osteopaths who use exercise prescription often were twice as likely to send referrals to an exercise physiologist and to specialist medical practitioners. Approximately 5% of referrals from Australian osteopaths is reported to be to specialist medical practitioners.[25] These findings are encouraging, and it may imply these osteopaths are more likely to use a multidisciplinary approach to their patient management with respect to exercise. Combined with the current findings, there is an increasing evidence base with respect to referrals to and from osteopaths.[25,26] We are not able to comment on the nature of the referrals however these findings warrant additional exploration.

The practice of osteopathy intersects with exercise and physical activity and well-being from several perspectives. Australian osteopaths who often use exercise prescription in patient care were over five times more likely to report discussing physical activity with their patients compared to osteopaths who do not. Our results suggest that osteopaths who discuss physical activity and use of exercise prescription forms a significant part of Australian osteopathic practice. Further, these findings suggest osteopaths may be playing an important role in promoting public health messaging around physical activity for general health. However, these assertions require further research.

Our data suggests osteopaths who report often using exercise prescription were more than twice as likely to treat sport injuries and 50% more likely to use sports taping. Injuries related to sport are common presentations to Australian osteopaths with approximately half of Australian osteopaths treating sport-related injuries.[27] However, exercise prescription for sport injuries in the context of osteopathy care is underexplored. Some case studies provide evidence [28,29] for its use, however there are also opportunities to develop higher level evidence to support patient outcomes and cost-effectiveness. There is evidence to support the use of sports taping for the management of musculoskeletal complaints.[30-32] The increased likelihood of sports taping use by osteopaths who often use exercise prescription suggests they may be combining these modalities in patient care, however more exploration is needed.

Nutritional supplement advice was also more likely to be used by Australian osteopaths who often use exercise prescription compared to those who do not. This is a consistent finding with the chiropractic profession.[33] In

Australia, few adults meet the fruit and vegetable intake guidelines [34], with a dominance of excessive calorie dense, ultra-processed food intake, posing a risk for heart disease, type 2 diabetes and several cancers.[35] The nature of the nutritional supplement advice provided by Australian osteopaths requires exploration, particularly whether this advice relates to specific supplements for management of musculoskeletal complaints or is more broadly applicable to overall health and wellbeing.

Previous research has shown a variety of manual therapy techniques are the dominant intervention strategy for Australian osteopaths.[15,18,25] Although usage of manual therapy by Australian osteopaths is common [15,18,25], our work highlights some techniques (soft tissue techniques, trigger point therapy) are more commonly utilised by osteopaths who often use exercise prescription compared to those who do not. This association may be due to the reported effectiveness of these manual therapy techniques for various musculoskeletal conditions [36-38] or potentially patient expectation.

The cross-sectional and self-report nature of the design of the ORION survey is a limitation when interpreting the results of the study. It is known that cross-sectional self-report designs are potentially susceptible to social desirability bias [39] and recall bias [40]. How practitioners defined exercise prescription when completing the questionnaire is open to interpretation and may have skewed the results. Lastly, the design of the survey does not allow for analysis of the type of exercise prescription (e.g. whether in the clinic or home) and whether osteopaths use exercise prescription for some presenting complaints only. It is probable that practitioners' approach different conditions in different ways and this clinical reasoning would be valuable to explore.

Our analyses open up a number of opportunities for future research to develop a greater understanding of how Australian osteopaths use exercise prescription in their practice. Additional research should explore the barriers and enablers for the use of exercise prescription, the type of exercises being prescribed and for what presenting complaints, as well as the clinical reasoning for exercise prescription and outcomes from care where exercise prescription forms part of the management. This research, combined with the current work, has the potential to inform pre- and post-professional education (including professional development), and health policy.

Conclusion

Our work sought to identify the prevalence of exercise prescription used by osteopaths for patient management, and to profile the clinical management characteristics of osteopaths who often use it. This work from a nationally-representative PBRN profiles the characteristics of the 74% of Australian osteopaths who often use exercise prescription in patient management. We identified a number of patient and clinical management characteristics associated with the use of exercise prescription often in osteopathy patient care. These included discussion of physical activity, diet and nutrition, often treating patients with sport injuries, and use of health professional referral networks. Whether these strategies are consistent with the best available evidence requires additional investigation, but the results support the conclusion that a significant proportion of Australian osteopaths often use exercise prescription in patient care.

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Conflict of Interest Statement

The authors declare there are no conflicts of interest for this study.

Table 1. Practitioner characteristics of Australian osteopaths who often use exercise prescription in patient care.

	Not often (n=257)	**Not often (n=257)**	**Often (n=733)**
Discuss with patients ('often')			
Diet/nutrition	72 (7.3%)	72 (7.3%)	303 (30.7%)
Smoking and drug use	31 (3.1%)	31 (3.1%)	148 (59.1%)
Physical activity	185 (18.7%)	185 (18.7%)	699 (70.7%)
Occupation Health & Safety	92 (9.3%)	92 (9.3%)	412 (41.7%)
Pain counselling	80 (8.1%)	80 (8.1%)	186 (18.8%)
Stress	111 (11.2%)	111 (11.2%)	377 (38.2%)
Nutritional supplements	48 (4.9%)	48 (4.9%)	203 (20.5%)
Medication	71 (7.2%)	71 (7.2%)	319 (32.3%)
Manual therapy (use 'often')	**Manual therapy (use 'often')**		
Counterstrain	88 (8.9%)	88 (8.9%)	331 (33.5%)
Muscle energy technique	173 (17.5%)	173 (17.5%)	614 (62.0%)
High-velocity, low-amplitude manipulation	133 (13.4%)	133 (13.4%)	498 (50.3%)
Joint manipulation	80 (8.1%)	80 (8.1%)	312 (31.6%)
Soft tissue technique	188 (19.0%)	188 (19.0%)	659 (66.6%)
Myofascial release	140 (14.2%)	140 (14.2%)	472 (47.7%)
Visceral techniques	31 (3.1%)	31 (3.1%)	67 (6.8%)
Lymphatic pump	23 (2.3%)	23 (2.3%)	61 (6.2%)
Autonomic balancing	53 (5.4%)	53 (5.4%)	104 (10.5%)
Biodynamics	61 (6.2%)	61 (6.2%)	94 (9.5%)
Functional technique	77 (7.8%)	77 (7.8%)	193 (19.5%)
Balanced ligamentous tension	106 (10.7%)	106 (10.7%)	243 (24.5%)
Chapman's reflexes	2 (0.2%)	2 (0.2%)	22 (2.2%)
Trigger point therapy	23 (2.3%)	23 (2.3%)	234 (23.7%)
Osteopathy in the Cranial Field	93 (9.4%)	93 (9.4%)	140 (14.2%)
Facilitated positional release	40 (4.0%)	40 (4.0%)	126 (12.8%)
Dry needling	34 (3.4%)	34 (3.4%)	200 (20.2%)
Shockwave therapy	3 (0.3%)	3 (0.3%)	15 (1.5%)
Ultrasound	7 (0.7%)	7 (0.7%)	20 (2.0%)
TENS	3 (0.3%)	3 (0.3%)	16 (1.6%)
Instrument manipulation	0	0	2 (0.2%)
Instrument-assisted soft-tissue	2 (0.2%)	2 (0.2%)	10 (1.0%)
Sport taping	8 (0.8%)	8 (0.8%)	113 (11.4%)

[a] d =0.31 95%CI [0.17, 0.45];[b] d =0.33 95%CI [0.19-0.48];[c] d =0.21 95%CI [0.07-0.35];[d] d =0.22 95%CI [0.06, 0.38] (d – Cohen's d effect size)

Table 2. Practice characteristics of Australian osteopaths who often use exercise prescription in patient care.

	Not often (n=257)	Often (n=733)	p-value	ORc 95%[CI]
Diagnostic imaging				
Referral for imaging ('often')	10 (1.0%)	63 (6.4%)	0.01	2.32 [1.17, 4.60]
Investigation of unknown pathologies	176 (17.8%)	564 (57.0%)	<0.01	1.52 [1.12, 2.10]
Investigation of suspected diagnosis	216 (21.8%)	617 (62.3%)	0.96	-
Investigation of potential fractures	194 (19.6%)	554 (56.0%)	0.97	-
Rule out risk factors prior to treatment	67 (6.8%)	205 (20.7%)	0.56	-
General screening of the spine	7 (0.7%)	25 (2.5%)	0.38	-
Patient assessment ('yes')				
Orthopaedic testing	241 (24.3%)	725 (73.2%)	<0.01	6.01 [2.54, 14.23]
Clinical assessment algorithm	95 (9.6%)	373 (37.7%)	<0.01	1.77 [1.32, 2.36]
Neurological testing	229 (23.1%)	687 (69.4%)	0.01	1.82 [1.11, 2.99]
Screening questionnaire	157 (15.9%)	476 (48.1%)	0.27	-
Cranial nerve testing	168 (17.0%)	502 (50.7%)	0.36	-

Table 3. Clinical management characteristics of Australian osteopaths who often use exercise prescription in patient care.

	Not often (n=257)	Not often (n=257)	Often (n=733)
Discuss with patients ('often')			
Diet/nutrition	72 (7.3%)	72 (7.3%)	303 (30.7%)
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Physical activity	185 (18.7%)	185 (18.7%)	699 (70.7%)
Occupation Health & Safety	92 (9.3%)	92 (9.3%)	412 (41.7%)
Pain counselling	80 (8.1%)	80 (8.1%)	186 (18.8%)
Stress	111 (11.2%)	111 (11.2%)	377 (38.2%)
Nutritional supplements	48 (4.9%)	48 (4.9%)	203 (20.5%)
Medication	71 (7.2%)	71 (7.2%)	319 (32.3%)
Manual therapy (use 'often')	**Manual therapy (use 'often')**		
Counterstrain	88 (8.9%)	88 (8.9%)	331 (33.5%)
Muscle energy technique	173 (17.5%)	173 (17.5%)	614 (62.0%)
High-velocity, low-amplitude manipulation	133 (13.4%)	133 (13.4%)	498 (50.3%)
Joint manipulation	80 (8.1%)	80 (8.1%)	312 (31.6%)
Soft tissue technique	188 (19.0%)	188 (19.0%)	659 (66.6%)
Myofascial release	140 (14.2%)	140 (14.2%)	472 (47.7%)
Visceral techniques	31 (3.1%)	31 (3.1%)	67 (6.8%)
Lymphatic pump	23 (2.3%)	23 (2.3%)	61 (6.2%)
Autonomic balancing	53 (5.4%)	53 (5.4%)	104 (10.5%)
Biodynamics	61 (6.2%)	61 (6.2%)	94 (9.5%)
Functional technique	77 (7.8%)	77 (7.8%)	193 (19.5%)
Balanced ligamentous tension	106 (10.7%)	106 (10.7%)	243 (24.5%)
Chapman's reflexes	2 (0.2%)	2 (0.2%)	22 (2.2%)
Trigger point therapy	23 (2.3%)	23 (2.3%)	234 (23.7%)
Osteopathy in the Cranial Field	93 (9.4%)	93 (9.4%)	140 (14.2%)
Facilitated positional release	40 (4.0%)	40 (4.0%)	126 (12.8%)
Dry needling	34 (3.4%)	34 (3.4%)	200 (20.2%)
Shockwave therapy	3 (0.3%)	3 (0.3%)	15 (1.5%)
Ultrasound	7 (0.7%)	7 (0.7%)	20 (2.0%)
TENS	3 (0.3%)	3 (0.3%)	16 (1.6%)
Instrument manipulation	0	0	2 (0.2%)

	Not often (n=257)	Not often (n=257)	Often (n=733)
Instrument-assisted soft-tissue	2 (0.2%)	2 (0.2%)	10 (1.0%)
Sport taping	8 (0.8%)	8 (0.8%)	113 (11.4%)

Table 4. Adjusted odds ratios for significant practitioner and clinical management characteristics of Australian osteopaths who often use exercise prescription in patient care.

	ORa	95%CI	p-value
Years in practice	0.96	0.94, 0.98	0.002
Co-located with other osteopaths ('yes')	1.54	1.02, 2.31	0.038
Send referrals to an exercise physiologist ('yes')	1.94	1.28, 2.94	0.002
Receive referrals from a naturopath ('yes')	1.87	1.21, 2.88	0.005
Discuss physical activity ('often')	5.61	3.11, 10.10	<0.01
Discuss nutritional supplements ('often')	1.90	1.13, 3.19	0.015
Treat postural disorders ('often')	1.59	1.05, 2.40	0.026
Treat sports injuries ('often')	2.43	1.61, 3.69	<0.01
Use soft tissue techniques ('often')	1.92	1.14, 4.95	0.014
Use trigger point techniques ('often')	2.72	1.49, 4.95	0.001
Use Osteopathy in the Cranial Field ('often')	0.47	0.29, 0.77	0.003
Use sports taping ('often')	1.78	1.06, 2.98	0.041
Future prescribing rights ('definitely')	1.79	1.06, 2.98	0.029

Practice characteristics of Australian osteopaths who often use exercise prescription in patient care.

	Not often	Often	p-value	OR 95%[CI]
Practice location				
Urban practice	209 (21.1%)	610 (61.6%)	0.49	-
More than one practice location	64 (6.5%)	282 (28.5%)	<0.01	1.88 [1.37, 2.60]
Co-located with other health professionals ('yes')				
Osteopath	149 (15.1%)	492 (49.7%)	<0.01	1.48 (1.10, 1.98]
General Practitioner	13 (1.3%)	58 (5.9%)	0.13	-
Specialist Medical Practitioner	6 (0.6%)	25 (2.5%)	0.40	-
Podiatrist	36 (3.6%)	109 (11.0%)	0.73	-
Physiotherapist	25 (2.5%)	118 (11.9%)	0.01	1.78 [1.13, 2.81]
Exercise Physiologist	16 (1.6%)	107 (10.8%)	<0.01	2.57 [1.49, 4.44]
Occupational Therapist	6 (0.6%)	13 (1.3%)	0.57	-
Psychologist	52 (5.3%)	138 (13.9%)	0.62	-
Massage Therapist	117 (11.8%)	382 (38.6%)	0.07	-
Acupuncturist	484 (4.8%)	139 (14.0%)	0.92	-
Naturopath	43 (4.3%)	150 (15.2%)	0.19	-
Dietician	16 (1.6%)	54 (5.5%)	0.54	-
Nutritionist	17 (1.7%)	60 (6.1%)	0.42	-
Send referrals to other health professionals ('yes')				
Osteopath	127 (12.8%)	378 (38.2%)	0.55	-
General Practitioner	224 (22.6%)	652 (65.9%)	0.43	-
Specialist Medical Practitioner	90 (9.1%)	353 (35.7%)	<0.01	1.72 [1.28, 2.31]
Podiatrist	149 (15.1%)	500 (50.5%)	<0.01	1.55 [1.16, 2.08]
Physiotherapist	85 (8.6%)	246 (24.8%)	0.88	-
Exercise Physiologist	75 (7.6%)	322 (32.5%)	<0.01	1.90 [1.40, 2.58]
Occupational Therapist	28 (2.8%)	78 (7.9%)	0.91	-
Psychologist	99 (10.0%)	249 (25.2%)	0.19	-
Massage Therapist	170 (17.2%)	500 (50.5%)	0.54	-