



## The Internet Journal of Allied Health Sciences and Practice

<http://ijahsp.nova.edu>

A Peer Reviewed Publication of the College of Allied Health & Nursing at Nova Southeastern University

*Dedicated to allied health professional practice and education*

<http://ijahsp.nova.edu> Vol. 9 No. 1 ISSN 1540-580X

---

# Could Self-Efficacy Relate to Workforce Issues for Rural Physiotherapists with a Specialist Paediatric Caseload? A Literature Review

---

Monica Minisini, BPhysio (Hons)<sup>1</sup>  
Lorraine Sheppard, BAppSc (Physiotherapy), MBA, PhD.<sup>2</sup>  
Anne Jones, BSc (Physiotherapy), MPhysio.<sup>3</sup>

1. Physiotherapist, Queensland Health and James Cook University
2. Professor of Physiotherapy, School of Health Sciences, University of South Australia and discipline of physiotherapy, James Cook University
3. Lecturer in Physiotherapy, discipline of physiotherapy, James Cook University

Australia

---

**CITATION:** Minisini, M., Sheppard, L. Jones, A. Could Self-Efficacy Relate to Workforce Issues for Rural Physiotherapists with a Specialist Paediatric Caseload? A Literature Review. *The Internet Journal of Allied Health Sciences and Practice*. Jan 2011. Volume 9 Number 1.

---

### ABSTRACT

**Objective:** Rural physiotherapists may need to extend their skills to address the lack of allied health service provision in rural areas but will do so based on their perceived self-efficacy. This narrative review aims to understand self-efficacy amongst rural physiotherapists and contributing factors to self-efficacy, especially in the specialised area of paediatrics. **Method:** A search of the literature was undertaken to understand the self-efficacy of rural physiotherapists who are expected to undertake specialist paediatric cases. Databases searched included CINAHL, PEDro, Informit, Proquest, PubMed, and Ovid. Articles were assessed for quality in accordance with the National Health and Medical Research Council (NHMRC) evidence ranking system. Using this search strategy and inclusion criteria, a total of forty five articles were found and included in the narrative review. **Results:** Self-efficacy, a person's judgement of their capabilities, is a key component in performance, accomplishments, and positive well-being. If the rural physiotherapist has low self-efficacy in their work practices, then physiotherapy specialisation or advance practice may not be considered an achievable career option. However, the caseload of the rural physiotherapist is vast and demanding, spanning across many boundaries and scopes including paediatrics, which has been defined as an area of specialisation within physiotherapy. The work practices of the rural physiotherapist's are often challenged by the complexities of rural area's and an unstructured, poorly supportive workforce, thus giving cause for the recognition of rural physiotherapy as a specialist branch of physiotherapy practice. Yet, the majority of the evidence base surrounding this topic has been developed through opinion pieces and observational studies which were rated as level IV evidence. At present, the lack of higher level evidence allowed readers to make assumptions based on opinions and descriptive studies. **Conclusion:** If the current workforce and structure leads to low self-efficacy in the rural physiotherapy population, this in turn could lead to impaired confidence in the ability to practice as a physiotherapist as well as result in the development of poor coping strategies. Early identification of the self-efficacy beliefs within this cohort will allow the development and evaluation of strategies to help address those issues identified as challenges in rural areas. There is a definite need for stronger, higher levels of evidence on this topic in order to develop more accurate definitions of the work practices and working environments of the rural physiotherapists. Additional higher level research is needed to better understand the self-efficacy of rural physiotherapists and possible contributing factors for low self-efficacy. Higher level research will also establish true clinical implications of low self-efficacy amongst the rural physiotherapist population.

## INTRODUCTION

Rural physiotherapists, to solve service delivery problems and workforce shortages, may adopt extended scope or specialised roles out of necessity.<sup>1</sup> The effects of the added demands on physiotherapists working in rural areas, especially with regards to the belief, or self-efficacy, they have in themselves to fulfil extended scope or specialised in roles is of interest in understanding the current workforce. One specialised area that forms part of a rural physiotherapist's case load is paediatrics.

This narrative review aims to understand self-efficacy amongst rural physiotherapists and contributing factors for perceived self-efficacy, especially in the specialised area of paediatrics.

## SEARCH STRATEGY

A systematic search of the literature was undertaken to identify articles concerning the self-efficacy of rural physiotherapists who are expected to undertake specialist paediatric cases as part of their caseload. The search language was limited to English and the databases searched included CINAHL, PEDro, Informat, Proquest, PubMed, and Ovid. The search timeframe was not limited. Initially, the search terms included physiotherapy, physical therapy, paediatrics, pediatrics, specialisation, specialists, generalisation, generalists, rural, remote, self-efficacy and confidence. When the search returned limited results, the search terms were extended to include work practices, recruitment, retention, education, and professional development. All search terms were used in combination with the "and/or" option, where available, to provide the opportunity to optimise search results. Initially the search was relatively narrow applying the search terms to articles based only on rural Australia giving limited results.

The search terms were then broadened and all Australian physiotherapy articles were sourced. This returned fewer than ten articles which were found to be of use. The search terms were broadened once more to include all physiotherapy and physical therapy articles available. References cited in articles found using the search strategy were also explored to identify any new articles not already identified. This also motivated the authors to search via the Google.com search engine. The search strategy identified a total of seventy-nine articles, of which forty-five were found to be suitable after the exclusion criteria were applied. The exclusion criteria included articles in abstract form only or not accessible to the researcher, articles not in English, articles exploring urban based practice alone, articles based on book reviews, or articles that discussed issues not relevant to rural practice or paediatric physiotherapy. No articles were found which considered self-efficacy and physiotherapy practice.

The articles were assessed for quality in accordance with the National Health and Medical Research Council (NHMRC) evidence ranking system.<sup>2</sup> Each article was assigned to a level on a scale of I through to IV, where Level I was assigned to evidence obtained from a systematic review of all relevant randomised controlled trials and level IV comprised opinions of respected authorities, descriptive studies, or reports from expert committees.<sup>2</sup> The articles were then further appraised for quality using the Guidelines for Critical Review, developed by the Occupational Therapy Evidence-Based Practice Research Group of the McMaster University.<sup>3</sup> Each article was given a score for quality in accordance with the criteria of study purpose, literature, study design, methodology, analysis, trustworthiness and conclusions/implications, with fifteen points being the maximum score achievable.<sup>3</sup> See *Appendix One*. Those articles rated as level IV evidence in accordance with NHMRC criteria, were excluded from further appraisal against the criteria for quality.<sup>2,3</sup> The main themes found are now presented.

## SELF-EFFICACY

Self-efficacy is the central component of the social learning theory, which was conceptualised by Bandura first in 1977.<sup>3-7</sup> The self-efficacy studies reviewed consistently used Albert Bandura's definition and application of self-efficacy in research.<sup>4,8-11</sup> It is defined as "a person's judgement of their capabilities to organise and execute designated courses of action required to attain designated levels of performance."<sup>12 (p.3)</sup> Bandura's key contention as to the role of self-efficacy in human functioning is that "people's level of motivation, affective states, and actions are based more on what they believe than on what is objectively true."<sup>(p. 2)</sup> Human functioning is influenced by many factors, especially as the success or failure that people experience as they engage in the myriad tasks that comprise their life naturally influences the many decisions they must make.<sup>12</sup> The knowledge and skills possessed will play critical roles in what an individual chooses to do and not do.<sup>12,13</sup> As individuals interpret the results of their achievements and make judgments about the quality of the knowledge and skills possessed, self-efficacy can also be seen as the confidence that people have in their ability to attempt tasks.<sup>13-15</sup> As such, self-efficacy is assessed by asking individuals to report the level, generality, and strength of their confidence to accomplish a task or succeed in a certain situation.<sup>12,13,15</sup>

Self-efficacy determines how individuals feel, think, motivate themselves, and behave, and can be seen as a key component in performance.<sup>4,5,7</sup> Research providing level IIIb evidence on self-efficacy, in the context of a training intervention to enhance performance expectancy, has supported positive associations between self-efficacy and performance measures and outcomes.<sup>4</sup> This is attributable to those with high levels of self-efficacy being able to heighten and sustain their efforts in the face of failure, quickly recovering their sense of self-efficacy after such failures or setbacks.<sup>7,16</sup> In contrast, the individual with low self-efficacy

lacks aspiration and has weak commitment to the goals they pursue. Such a person is slow to recover their sense of efficacy following failure or setbacks.<sup>7</sup> The individual with low self-efficacy demonstrates a lack of confidence and then views insufficient performances as poor aptitude, and any failure will cause them to lose faith in their capabilities, thus allowing them to fall easy victim to stress and depression.<sup>7</sup>

The individual's self-efficacy beliefs are generated through four major processes: a) cognitive b) motivational c) affective and d) selection.<sup>7</sup> Self-efficacy can be characterised as being competence-based, prospective, and action-related, where the individual interprets and make judgments on their competence and actions, thereby affecting their confidence.<sup>16</sup> There is level IV evidence that self-efficacy has an effect on cognitive processes such as personal goal setting, as it influences the individual's self-appraisal of capabilities, or confidence.<sup>7</sup> A strong sense of self-efficacy is needed to remain task oriented in the face of pressing situational demands, failures, and setbacks that have significant repercussions.<sup>7</sup> Those with strong self-efficacy exert greater effort when they fail, with strong perseverance contributing to performance accomplishments. Self-efficacy also has significant impact on affective processes, where an individual's belief in their coping capabilities affects how much stress and depression they experience in challenging situations.<sup>7</sup> Self-efficacy plays a central role in control over environmental stressors, and as such, has an indirect effect on anxiety arousal. Individuals who believe they can exercise control over threats do not activate the body's anxiety processes, whereas those who believe they cannot manage threats experience high anxiety arousal.<sup>7</sup>

There is level III and IV evidence that human accomplishments and positive well-being require strong self-efficacy beliefs in the individual's capabilities and personal judgments.<sup>4,7</sup> Research exploring how self-efficacy is believed to contribute to career development and success in vocational pursuits demonstrated that strong self-efficacy beliefs partly determine how well the individual develops the basic cognitive, self-management, and interpersonal skills on which occupational careers are founded.<sup>4,7</sup> Psychosocial skills contribute more heavily to career success than do occupational technical skills.<sup>7</sup> Development of coping capabilities and skills in managing the individual's motivation, emotional states, and thought processes increases self-efficacy, and the higher the self-efficacy, the better the occupational functioning.<sup>7-11,17</sup> A lack of self-efficacy may also be an important factor in an individual's elimination of possible career options.<sup>4,17</sup> A person with low confidence in their capabilities, actions, theoretical knowledge, and personal judgements in a certain occupation, would choose to eliminate that career choice. Strengthening self-efficacy to match expectations can have direct implications for facilitating career development; however, as the majority of evidence available is of a lower level, true clinical implications of this remain unclear.<sup>8,17</sup> For example, in the rural setting with challenges of a poorly structured, unsupportive environment, the role of the clinician's self-efficacy in the delivery of clinical services subsequently offered and their career development is unknown.<sup>18-23</sup>

### **SPECIALISATION IN PHYSIOTHERAPY**

A specialist physiotherapist is one who has achieved a required standard of practical and theoretical expertise, and competence in a required area of special need or interest within a recognized area of physiotherapy.<sup>24,27</sup> Professional acknowledgement identifies to other health professionals and employers that the physiotherapist with specialist qualifications has advanced clinical competence.<sup>24,28</sup>

In 1980, the first specialisation model was proposed, offering five areas of specialisation in accordance with the Australian Physiotherapy Association (APA) National Groups of orthopaedics, neurology, cardiothoracic, obstetrics and gynaecology, and paediatrics.<sup>27,29,30</sup> Since then, the APA has developed a framework which encourages the physiotherapy profession to view specialisation as a career pathway.<sup>24,29</sup> The framework also includes recognition of the general physiotherapist and extended scope practitioner.<sup>29</sup> Rural physiotherapists are an example of a generalist practitioner with specialist attributes as they are required to be very skilful across a broad area.<sup>29</sup> In the "APA Vision for Physiotherapy 2020" released in February 2005, the APA predicted that in rural communities, the generalist physiotherapist role will take on increasing importance and an expanded scope of practice will contribute to the increased demand for physiotherapy services.<sup>31</sup> However, generalist or rural physiotherapy is not yet a recognised speciality by the Australian College of Physiotherapy (ACOP).

Only a small number of clinical physiotherapists have completed the specialisation process in over twenty years.<sup>24,29</sup> It has been suggested that many of the requirements of ACOP to attain specialist recognition are considered too difficult for physiotherapists not working in an academic setting.<sup>29</sup> In 1979, the APA surveyed a random sample of 769 members, approximately 20% of the total membership at that time, to uncover possible reasons why physiotherapists have been slow to take up the process of specialisation.<sup>27</sup> Most responses related to personal and career restraints with insufficient awareness of the profession, family commitments, and financial and time constraints being the most common responses.<sup>24,27,29</sup> These issues are still applicable and remain the reasons why many physiotherapists do not undertake specialisation.<sup>24,27,29</sup> The inclusion of specialisation as part of the career pathway should be introduced at an undergraduate level, enabling future physiotherapists to be better informed and to allow adequate planning for the necessary post graduate education required in order to specialise.<sup>24</sup> In addition, both public and

private sectors need to acknowledge the value of having physiotherapists with advanced knowledge and skills in a specified area.<sup>24,29</sup>

An alternate hypothesis is that the small uptake of specialist physiotherapy may be attributed to self-efficacy beliefs. As Bandura stated, career choice and development is an example of the power of self-efficacy to affect the course of life paths through choice-related processes.<sup>14</sup> The higher the level of the individual's self-efficacy the wider the range of career options they seriously consider, the greater their interest in them, and the better they prepare themselves educationally for the occupational pursuits they choose, therefore resulting in greater success.<sup>7</sup> Rural physiotherapists experience poor workforce structure and lack of support.<sup>16,20,34-38</sup> Perhaps secondary to this, the career option of specialization is not considered achievable as there is no rural speciality available and specialisation in other clinical areas is less accessible. Perhaps too the requirements of specialisation are perceived as being too difficult due a lack of self-efficacy. The Chartered Society of Physiotherapy, among other worldwide physiotherapy organisations, has welcomed the introduction of new roles such as consultant therapists, advanced practitioners, and extended scope practitioners to enable a more a more flexible, fit-for-practice physiotherapy workforce, especially in rural areas.<sup>28,39</sup>

Currently in Australia, all physiotherapy organisations, including governing bodies, agree that there is poor career structure, recognition and remuneration for clinical specialists and extended scope practitioners.<sup>56</sup> However, research into physiotherapy specialisation is relatively limited, possibly reflecting the poor uptake of the role. The poor uptake of the specialist role is likely affected by the lack of its role promotion and academic pathways. The perceived poor uptake of the role of specialist also reflects the differences in nomenclature used by a majority of international organisations outside Australia.<sup>28</sup> The APA National Groups have identified key specialized areas within the physiotherapy profession that require the physiotherapist to demonstrate they are up-to-date with current research and evidence, as well as demonstrating advanced clinical skills.<sup>30</sup> Terms such as "expert" and "clinical specialist" are often used without clearly defining their meaning and may be used interchangeably. Yet a specialist has qualifications determining advanced clinical competence and theoretical expertise, whereas an expert may have many years experience in a specialist field, but not have undergone any formal qualification or assessment of their knowledge and skills.<sup>30</sup> In addition, an extended scope practitioner is a clinical specialist with an extended scope of practice where certain elements of their role fall outside the scope of physiotherapy practice.<sup>1,28</sup> Moreover, a specialist is one who is devoted to a special branch of learning while a generalist is one whose skills extend to several different fields.<sup>28,32-34</sup> The differences in nomenclature and use of terms can lead to confusion in role definition and limit comparability of existing research.

### **PAEDIATRIC PHYSIOTHERAPY AS A SPECIALIST PROFESSION**

Paediatric physiotherapy has been considered a specialist area of physiotherapy, and one of the APA National Groups, since 1980.<sup>25,27,29</sup> It is an area of specialisation as paediatric physiotherapy techniques differ from adult therapeutic techniques in many ways, and the unique and changing nature of the child mandates a distinct philosophy, knowledge of developmental science, and specialised techniques in the provision of physiotherapy services to children.<sup>40-42</sup> Paediatric physiotherapists have a special affinity for children, with the aim being to help the child achieve optimal physical development.<sup>43</sup> The most important concept of paediatric physiotherapy is to understand that the child is not a miniature adult, and requires different techniques in the application of physiotherapy.<sup>40,42</sup> Key concepts that distinguish paediatric physiotherapy from general physiotherapy include the greater need for a holistic approach that encompasses the total child, the family, and the natural setting in which the children live, learn, and play.<sup>40</sup> Family centred practice is germane for children and adolescents and all paediatric practice settings.<sup>43</sup> Another concept includes the developmental changes of the child, especially the differences between child and adult, which require therapists to have knowledge of developmental sciences and the ability to anticipate future changes.<sup>40</sup> With the gradual evolution of the profession, paediatric physiotherapy and clinical models have become more complex.<sup>41,44</sup> There is level IV evidence stressing the importance of recognising paediatrics as a clinical specialised science within the physiotherapy profession.<sup>25-29,40-4</sup>

In a survey to establish the work practices of rural physiotherapists in Northern Territory and South Australia, Sheppard determined that 85% of the respondents were considered to be generalist physiotherapists, with paediatrics accounting for 34% of their caseload.<sup>21</sup> Diversity of work practices was evident and varied between practitioners. More interestingly, specialisation of practice was only mentioned by 15% of respondents and was attributed to employment in Aboriginal Health. To further develop skills unique to a specialised area of physiotherapy often requires travel to major centres and the professional development available was usually metropolitan in context, rather than rural.<sup>21</sup> A lack of experience and necessary skills may mean these physiotherapists have low self-efficacy when faced with a more specialist paediatric caseload.<sup>35,36</sup> Given Sheppard's research provided level 111b evidence, additional higher level research is required to understand the true clinical implications of these issues, as only a small picture of rural paediatric physiotherapy workforce and their current work practices is known despite paediatric cases contributing to a large proportion of the rural physiotherapist's caseload.<sup>21</sup>

Recently, the APA undertook an inquiry into the Adequacy of Services to Meet the Developmental Needs of Western Australia's Children.<sup>46</sup> The inquiry demonstrated that the available physiotherapy services are fragmented resulting in some children, particularly those in rural and remote areas, being unable to access services that are comprehensive and responsive to their needs. Access to physiotherapy services was further complicated by long waiting lists and inadequate staffing, with those living in outer metropolitan and rural areas often further disadvantaged as there are fewer allied health services in these areas. People living in rural areas often do not have access to transport to travel to health clinics, further highlighting the challenges faced by those living in rural areas.<sup>46</sup>

### **RURAL PHYSIOTHERAPY AND CONTRIBUTING FACTORS FOR LOW SELF-EFFICACY BELIEFS**

Rural practice has been identified as being its own discipline, as physiotherapists working in rural locations manage a broad range of clinical conditions across the age spectrum.<sup>16,19,20,35-37,47,48,51</sup> The role of the rural physiotherapist is that of a generalist whose scope of practice demands boundary spanning across disciplines where there are fewer medical specialists and other allied health professionals.<sup>16,20,34-37</sup> Whilst this contributes to limited opportunities to specialise within particular physiotherapy fields, it does provide the opportunity for physiotherapists to become specialist-generalists over a much more diverse range of clinical areas.<sup>16,19-21,35-37,47-51</sup> There is level III evidence that many physiotherapists in rural and remote areas desire recognition for their specialist work as rural physiotherapists.<sup>51</sup> Additionally, considerable work has gone into the process of having rural practice recognised by the ACOP as a unique area of physiotherapy.<sup>48</sup> However, until this is formally established, issues regarding clear definition of workforce structure and job descriptions remain.

The challenges of rural physiotherapy have been well documented and this is of significant concern given the high levels of health need demonstrated in rural communities.<sup>16,20,33,36-38</sup> Level IV evidence from Struber revealed a complex rural physiotherapy workforce that is fragmented by part-time work, multiple workplaces, and overlap within the public and private sector.<sup>54</sup> Where outreach models are implemented, they are often delivered from an urban setting and may not be developed or targeted appropriately to a rural setting.<sup>55</sup> A high level of support is needed for those practicing in rural areas, especially when the physiotherapist lacks experience in the diverse clinical skills needed to successfully practice in a rural area.<sup>19,21,47</sup> Battye and McTaggart found level IV evidence that most allied health professionals in rural areas are dissatisfied with their support, workload, business and personal management, team processes, and preparation for rural practice.<sup>19</sup> The availability of other health professionals becomes crucial to the rural physiotherapist's service delivery, professional support, and interdisciplinary interaction. A study by Williams et al identified professional issues for physiotherapy rural practice as career path, career development, and specialisation.<sup>51</sup> Recruitment, retention and lack of resources were identified as issues for rural physiotherapists with inadequate staffing being the key issue.<sup>47,51</sup>

Of particular concern are the vacancy and attrition rates amongst the rural workforce.<sup>53,54</sup> This is projected to be an ongoing concern in the near to medium term future until physiotherapy training can meet demand.<sup>23</sup> It has been speculated that dramatically improving the career structure will help attract quality students and improve professional retention in rural areas, and address workforce shortages.<sup>23,50</sup> The current impositions put upon physiotherapists for clinical services where there are acute and chronic workforce shortages are leading to burnout and significant attrition.<sup>19,22,23,47</sup> Frequently, new graduates fill vacancies and it is imperative that they very quickly develop advanced skills across a broad range of clinical and management areas.<sup>48,53</sup> However, Bent highlights that such positions are not suitable for new graduates, despite their recruitment, and the APA has found that many of the physiotherapists currently working in rural areas are inexperienced and lack the diversity of skills necessary to cope in such a demanding environment.<sup>47</sup>

These issues can be considered as contributing factors to the lack of available physiotherapy services in rural areas, as well as contributing factors to the potential development of low self-efficacy amongst this population.<sup>19,31,47,51,52</sup> Using Bandura's theory, it can be deduced that such contributing factors are causes for a low self-efficacy beliefs within the rural physiotherapy workforce, resulting in conflict with ethical standards of practice. However, for this argument to become convincing, further higher level research needs to be undertaken on the topic

### **CONCLUSION**

The poor structure of the rural physiotherapy workforce has been identified, and it is evident that these areas are unable to retain physiotherapists for the long term. However, despite decades of research, it appears the physiotherapy profession has still not moved forward with regard to this problem. It is evident that there is a need for further high level research into methods to better address these problems. While there have been multiple strategies and initiatives put in place to help address the work structure in rural areas, no analysis appears to have been conducted to determine the effectiveness. This is especially the case if the current workforce structure and environment cause the rural physiotherapists to have low self-efficacy and poor beliefs in their own capabilities, thus affecting their confidence. The consequences of having low self-efficacy include poor confidence in the

ability to practice as a physiotherapist, as low self-efficacy results in the individual's belief that they lack the skills and attributes to do so, and in poor coping strategies when faced with challenges in the workplace. In turn, this can then lead to issues with competence, conflicting with professional conduct and ethical standards.

It has also been identified that the specialisation process is not well promoted, and the inclusion of specialisation as a possible career option at an undergraduate level is relatively new. The small uptake of specialisation may also be attributed to self-efficacy beliefs which impact on choice-related processes related to career choice and development. Current evidence has identified the lack of specialists in rural practice is already an issue, further compounding the challenges of working in a rural area. Particular areas of concern are the lack of paediatric physiotherapy services, and the need for recognition of rural physiotherapy as a specialist area because of the diversity of their work. However due to the lack of higher level evidence, true clinical implications of these issues remain unclear.

This paper has identified the importance of undertaking higher level research to investigate the existence and implications of low self-efficacy amongst rural physiotherapists, especially those working with specialist paediatric caseloads. Early identification of the self-efficacy beliefs within this cohort will allow the impact of this to be incorporated into the evaluation of strategies, both existing and new, to help address challenges in rural areas. In particular this will allow consideration of the role of self-efficacy in re-developing the rural physiotherapy workforce into a more stable and supportive one.

---

## REFERENCES

1. Maher P. Extending scope of practice boundaries. *Physiotherapy InMotion*, June 2009, 5.
2. NHMRC. *A guide to the development, implementation and evaluation of clinical practice guidelines*. Canberra, NSW: NHMRC, 1995.
3. Law M, Stewart D, Pollock N, Bosch J, Westmorland M. *Critical review form – Quantitative studies*. California, USA: McMaster University, 1998.
4. Schwoerer CE, May DR, Hollensbe EC, Mencl J. General and specific self efficacy in the context of a training intervention to enhance performance expectancy. *Human Resource Development Quarterly*. 2005;16(1):111-29.
5. Bandura A. Self efficacy: toward a unifying theory of behavioural change. *Psychological Review*. 1997;2(84):191-215.
6. Bandura A. *Social foundations of thought and action - a social cognitive theory*. Englewood Cliffs: Prentice Hall, 1986.
7. Bandura A. *Self efficacy*. Encyclopaedia of Human Behaviour: Vol.4. San Diego: Academic Press, 1994.
8. Betz NE, Hackett G. The relationship of career related self efficacy expectations to perceived career options in college women and men. *Journal of Counselling Psychology*. 1981;28(5):399-410.
9. Gist MF, Schwoerer CE, Rosen B. Effects of alternative training methods on self efficacy and performance in computer software training. *Journal of Applied Psychology*. 1989;74(6):884-91.
10. Stajkovic AD, Luthans F. Self efficacy and work related performance: A meta-analysis. *Psychological Bulletin*. 1998;124(2):240-61.
11. Tracey JB, Hinkin TR, Tannenbaums S, Mathieu JE. The influence of individual characteristics and the work environment on varying levels of training outcomes. *Human Resource Development*. 2001;12(1):5-31.
12. Bandura A. *Self efficacy: The exercise of control*. New York: Freeman, 1997.
13. Pajares F. *Overview of social cognitive theory and of self-efficacy*, 2002. Retrieved October 17, 2009 from the Emory website: <http://www.emory.edu/EDUCATION/mfp/eff.html>
14. Sander P, Sanders L. Measuring confidence in an academic study: a summary report. *Electronic Journal of Research in Educational Psychology and Psychopedology*. 2003;1(1):1-17.
15. Maher M, Pintrich P. *Advances in motivation and achievement*. Greenwich: JAI Press, 1997.
16. Luszczynska A, Scholz U, Schwarzer R. The general self-efficacy scale: Multicultural validation studies. *The Journal of Psychology*. 2005;139(5):439-57.
17. Eden D, Aviram A. Self-efficacy training to speed reemployment: Helping people to help themselves. *Journal of Applied Psychology*. 1993;78(33):352360.
18. Arthur L, Sheppard L, Dare R. Redefining rural and remote physiotherapy practice. *Australian Journal of Rural Health*. 2005;13(1):57.
19. Battye KM, McTaggart K. Development of a model for sustainable delivery of outreach allied health services to remote north-west Queensland, Australia. *Rural and Remote Health*. 2003;3(194):1-14. Retrieved April 17, 2007, from [http://rrh.deakin.edu.au/publishedarticles/article\\_print\\_194.pdf](http://rrh.deakin.edu.au/publishedarticles/article_print_194.pdf)
20. Sheppard L, Nielsen I. Rural and remote physiotherapy: Its own discipline. *Australian Journal of Rural Health*. 2005;13(3):135-6.
21. Sheppard L. Work practices of rural and remote physiotherapists. *Australian Journal of Rural Health*. 2001;9(2): 85-91. Retrieved April 17, 2006, from <http://www.blackwell-synergy.com/doi/full/10.1046/j.1440-1584.2001.00340.x>

22. Lindsay R, Hanson L, Taylor M, McBurney H. (2008). Workplace stressors experienced by physiotherapists working in regional public hospitals. *Australian Journal of Rural Health*, 16(4), 194-200.
23. Smith T, Cooper R, Brown L, Hemmings R, Greaves J. Profile of the rural and remote allied health workforce in Northern NSW and comparison with previous studies. *Australian Journal of Rural Health*. 2008;16(3):156-63.
24. Carr J, Sheppard R. Clinical physiotherapy specialisation in Australia: some current views. *Australian Journal of Physiotherapy*. 1996;42(1):10-14.
25. Durrell S. Expanding the scope of physiotherapy: clinical physiotherapy specialists in consultants' clinics. *Manual Therapy*. 1996;1(4):210-3.
26. New Zealand Society of Physiotherapists. *Physiotherapy specialisation – The way forward*. Auckland, New Zealand: The Advanced Practitioners Working Party, 2008.
27. van de Meene LW. Towards the effective use of the specialist physiotherapist. *The Australian Journal of Physiotherapy*. 1988;34(2):83-7.
28. Chartered Society of Physiotherapy. *Specialisms and Specialists: Guidance for developing the clinical specialist role*. London, UK: Chartered Society of Physiotherapy, 2001.
29. Bennett CJ, Grant MJ. Specialisation in physiotherapy: A mark of maturity. Editorial. *Australian Journal of Physiotherapy*. 2004;50(1):3-5.
30. Jull G. *Specialist physiotherapists graduate in record numbers*. APA Media Release. Victoria, NSW: APA, 2007.
31. APA. *APA Vision for Physiotherapy 2020*. Victoria, NSW: APA, 2005.
32. Harrold LR, Field TS, Gurwitz JH. Knowledge, patterns of care and outcomes of care for generalists and specialists. *Journal of General Internal Medicine*. 1999;14(8):499-511.
33. Jensen GM, Gwyer J, Shepard KF, Hack LM. Expert practice in physical therapy. *Physical Therapy*. 2000;80(1):28-43.
34. Resnik L, Jensen GM. Using clinical outcomes to explore the theory of expert practice in physical therapy. *Physical Therapy*. 2003;83(12):1090-106.
35. APA. Physiotherapy workforce in rural and remote Australia. *Physiotherapy InMotion*, June 2009, 16-17.
36. APA. The broader context of rural and remote health. *Physiotherapy InMotion*, June 2009, 18-19. Victoria, NSW: APA.
37. APA. *Sole Rural and Remote Physiotherapists*. Australian Physiotherapy Association position statement, 2004. Retrieved July 11th, 2008, from the APA website:  
[http://apa.advsol.com.au/independent/documents/position\\_statements/public/SoleRuralandRemotePhysiotherapists.pdf](http://apa.advsol.com.au/independent/documents/position_statements/public/SoleRuralandRemotePhysiotherapists.pdf)
38. Lazarus SS, Page CM, Barcome DF. Rehabilitation services in rural and remote communities: delivery by hospital based and local teams. *Archive of Physical Medical Rehabilitation*. 1984;65(7):383-7.
39. Chartered Society of Physiotherapy. *Response to workforce review team provisional recommendations for NHS physiotherapy workforce for England 2007/2008*. London, UK: Chartered Society of Physiotherapy, 2006.
40. Cherry DB. Pediatric physical therapy: Philosophy, science, and techniques. *Pediatric Physical Therapy*, 1991;30(2):70-6.
41. Heriza CB, Sweeney JK. Pediatric physical therapy: Part 1. Practice scope, scientific basis and theoretical foundation. *Infants and Young Children*. 1994;7(2):20-32.
42. Palisano RJ. Paediatric physical therapy: An individual perspective. *Pediatric Physical Therapy*. 1994;6(3):140-1.
43. Fary R. Increase work value – The case for physiotherapy 2004: Specialised areas of clinical practice: Development and changes: Paediatrics. *Physiotherapy Work Value Submission*. 2004(a);18(1):51-61.
44. Heriza CB, Sweeney JK, Markowitz R. The changing profile of paediatric physical therapy: a ten year analysis of clinical practice. *Pediatric Physical Therapy*. 1994;6(3):113-8.
45. Spake EF. Reflections and visions: The state of paediatric curricula. *Paediatric Physical Therapy*. 1994;6(3):128-31.
46. APA. *Submission Parliamentary Standing Committee Enquiry into the Developmental Needs of 0 – 3 Year Olds in WA*. Paper presented to the Principal Research Officer of Community Development and Justice Standing Committee, Legislative Assembly Parliament House, Perth, 2009, February 1.
47. Bent A. Allied health in Central Australia: Challenges and rewards in remote area practice. *Australian Journal of Physiotherapy*. 1999;45(3):203-212. Retrieved April 17, 2006, from  
[http://www.physiotherapy.asn.au/ajp/vol\\_45/3/AustJPhysiother45i3Bent.pdf](http://www.physiotherapy.asn.au/ajp/vol_45/3/AustJPhysiother45i3Bent.pdf)
48. Fary R. Increase work value – The case for physiotherapy 2004: Specialised areas of clinical practice: Development and changes: Rural and remote Physiotherapy. *Physiotherapy Work Value Submission*. 2004(b);18(1): 68-78.
49. Holdsworth LK, Webster VS, McFayden AK. Self-referral to physiotherapy: deprivation and geographical setting. Is there a relationship? Results of a national trial. *Journal of Physiotherapy*. 2006;92(1):16-25.
50. Ruston SA. Extended scope practitioners and clinical specialists: A place in rural and remote health? *Australian Journal of Rural Health*. 2008;16(3):120-3.
51. Williams E, D'Amore W, McMeeken J. Physiotherapy in rural and regional Australia. *Australian Journal of Rural Health*. 2007;15(6):380-6.

52. Grimmer K, Bowman P. Differences between metropolitan and country public hospital allied health services. *Australian Journal of Rural Health*. 1998;6(1):181-8.
53. Australian Institute of Health and Welfare (AIHW). *Physiotherapy Labour Force Survey, 2002*. Retrieved July 9th, 2008, from the AIHW website: <http://www.aihw.gov.au/labourforce/physiotherapists.cfm>
54. Struber J. Recruiting and retaining allied health professionals in rural and remote Australia: Why is it so difficult? *The Internet Journal of Allied Health Sciences and Practice*. 2004;2(2):1-11.
55. Wilson KG, Seguin N, Goodman A, Greene G, Pole M. Rural and remote health professionals' satisfaction with a rehabilitation mobile outreach program. *Archive of Physio Med Rehab*. 1999;80(3):332-8.
56. Sheppard L. What people want – Delivery of health services in rural and remote Australia. *The Internet Journal of Allied Health Science and Practice*. 2005;3(4):1-6. Retrieved April 17, 2006, from <http://ijahsp.nova.edu/articles/vol3num4/sheppard.htm>

**APPENDIX ONE**

**Critical Appraisal Table**

The following table lists each article in order of highest level of evidence to lowest level of evidence in accordance with each NHRMC (1999) score.

AUTHOR	YEAR	ARTICLE TITLE	STUDY DESIGN	LAW ET AL. (1998) SCORE	NHRMC (1995) SCORE
10. Stajkovic and Luthans	1998	Self efficacy and work related performance: a meta analysis	Meta Analysis	12	I
17. Eden and Aviram	1993	Self efficacy training to speed reemployment: helping people to help themselves.	Quasi Experimental	11	IIIa
49. Holdsworth, Webster and McFadyen	2006	Self-referral to physiotherapy: deprivation and geographical setting, Is there a relationship? Results of a national trial.	Quasi Experimental	12	IIIa
52. Grimmer and Bowman	1998	Differences between metropolitan and country public hospital allied health services	Cross Sectional	10	IIIb
22. Lindsay, Hanson, Taylor and McBurney	2008	Workplace stressors experienced by physiotherapists working in regional public hospitals	Cross Sectional	13	IIIb
16. Luszczynska and Schwarzer	2005	The General Self efficacy Scale: Multicultural Validation Studies	Cross Sectional	10	IIIb
14. Sander & Sanders	2003	Measuring Confidence in academic study: A summary Report	Cohort	12	IIIb
21. Sheppard	2001	Work Practices of Rural Physiotherapists	Cross Sectional	10	IIIb
23. Smith, Cooper, Brown, Hemmings and Greaves	2008	Profile for the rural allied health workforce in Northern NSW and comparison with previous studies	Cross Sectional	13	IIIb
51. Williams, D'Amore and McMeeken	2007	Physiotherapy in Rural and Regional Australia	Cross Sectional	13	IIIb
8. Betz and Hackett	1981	The Relationship of Career-Related Self Efficacy Expectations to Perceived Career Options in College Men and Women	Cross sectional	9	IIIb
4. Schwoerer, May, Hollensbe, and Mencl	2005	General and Specific Self Efficacy in the Context of a Training Intervention to Enhance Performance Expectancy	Pre test/Post test Field Study	11	IIIb
34. Resnik and Jensen	2003	Using Clinical Outcomes to Explore the Theory of Expert Practice in Physical Therapy	Retrospective Cohort	12	IIIb
19. Battye and McTaggart	2003	Development of a model for sustainable delivery of outreach allied health services to remote north west QLD, Australia	Quasi Experimental/ Cohort	10	IIIc
9. Gist, Schwoerer and Rosen	1989	Effects of alternative training methods on self efficacy and performance in computer software training	Quasi Experimental/ Cohort	9	IIIc
11. Tracey, Hinkin, Tannenbaums and Mathieu	2001	The influence of individual characteristic and the work environment on varying levels of training outcomes	Quasi Experimental/ Cohort	10	IIIc
55. Wilson, Seguin, Goodman, Greene and Pole	1999	Rural health professional's satisfaction with a rehabilitation mobile outreach program.	Cross Sectional/ Descriptive	10	IIIc
47. Bent	1999	Allied Health in Central Australia: Challenges and rewards in remote area practice	Descriptive Study	N/A	IV
25. Durrell	1996	Expanding the scope of physiotherapy: clinical physiotherapy specialists in consultant's clinics	Opinion piece	N/A	IV
18. Arthur, Sheppard and Dare	2005	Redefining rural practice	Opinion Piece	N/A	IV
7. Bandura	1994	Self Efficacy	Opinion Piece	N/A	IV
5. Bandura	1977	Self efficacy: toward a unifying theory of behavioural change	Opinion Piece	N/A	IV
12. Bandura	1997	Self efficacy: The exercise of control.	Opinion Piece	N/A	IV
6. Bandura	1986	Social foundations of thought and action - a social cognitive	Opinion Piece	N/A	IV

		theory.			
13. Pajares	2002	Overview of social cognitive theory and of self efficacy	Opinion Piece	N/A	IV
29. Bennett and Grant	2004	Specialisation in Physiotherapy: A Mark of Maturity	Opinion Piece	N/A	IV
24. Carr and Shepherd	1996	Clinical physiotherapy specialisation in Australia: some current views	Opinion Piece	N/A	IV
40. Cherry	1991	Pediatric Physical Therapy: Philosophy, Science and Techniques	Opinion Piece	N/A	IV
43. Fary	2004	Physiotherapy Work Value Submission – Specialised Areas of Clinical Practice: Developments and Changes: Paediatrics	Opinion Piece	N/A	IV
48. Fary	2004	Physiotherapy Work Value Submission – Specialised Areas of Clinical Practice: Developments and Changes: Rural Physiotherapy	Opinion Piece	N/A	IV
32. Harrold, Field, and Gurwitz	1999	Knowledge, Patterns of care and outcomes of care for generalists and specialists.	Opinion Piece	N/A	IV
41. Heriza and Sweeney	1994	Pediatric Physical Therapy: Part 1. Practice scope, scientific bases and theoretical foundation.	Opinion Piece	N/A	IV
44. Heriza, Sweeney and Markowitz	1994	The Changing Profile of Pediatric Physical Therapy: A 10 year analysis of Clinical Practice.	Opinion Piece	N/A	IV
33. Jensen, Gwyer, Shepard and Hack	2000	Expert Practice in Physical Therapy	Opinion Piece	N/A	IV
38. Lazarus, Page and Barcome	1984	Rehabilitation services in rural communities: delivery by hospital based and local teams	Opinion Piece	N/A	IV
1. Maher and Pintrich	1997	Advances in motivation and achievement	Opinion Piece	N/A	IV
26. New Zealand Society of Physiotherapists	2008	Physiotherapy Specialisation – The Way Forward	Opinion Piece	N/A	IV
42. Palisano	1994	Pediatric Physical Therapy: An Individual Perspective	Opinion Piece	N/A	IV
50. Ruston	2008	Extended scope practitioners and clinical specialists: A place in rural health?	Opinion Piece	N/A	IV
21. Sheppard	2005	What the people want – delivery of health services in rural Australia	Opinion Piece	N/A	IV
20. Sheppard and Nielsen	2005	Rural physiotherapy: Its own discipline	Opinion Piece	N/A	IV
45. Spake	1994	Reflections and Visions: The State of Pediatric Curricula	Opinion Piece	N/A	IV
54. Struber	2004	Recruiting and Retaining Allied Health Professionals in Rural Australia: Why is it so difficult?	Opinion Piece	N/A	IV
39. Chartered Society of Physiotherapy	2006	Specialism's and Specialists: Guidance for Developing the Clinical Specialist Role	Opinion Piece	N/A	IV
27. Van De Meene	1988	Towards the effective use of the specialist therapist	Opinion Piece	N/A	IV