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Telerehabilitation Compared to Conventional Physical Therapy in Improving Physical Functioning in Community-Dwelling Adults: A Systematic Review

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Overview

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What is Telerehabilitation?

- "The use of electronic communication to remotely provide healthcare information and services"¹
- Used by a variety of disciplines
- Can be used to reach patients in rural areas or accommodate for long distances between patients and clinicians
- Minimal current telehealth regulations within PT profession
- Various types of telerehabilitation
 - Video conferencing, telephone, messaging device, accelerometer



Why does Telerehabilitation matter?

- Technological advancements
- Increasing availability of services
- Meets the need for increasing independence and compliance
- Meets the need for promoting and advocating for expansion of physical therapy profession



Purpose

 To determine if remote telerehabilitation (RTR) is comparable to conventional physical therapy (PT) to improve physical functioning in community-dwelling adults.

Search Terms

 (Telerehabilitation) AND ("Physical Therapy" OR Physiotherapy) AND (Adults) AND (Monitor or support or aftercare or follow up) AND (efficacy OR effectiveness) NOT Virtual reality

Databases

- PubMed
- ProQuest Central
- Google Scholar
- ScienceDirect



Inclusion Criteria

Exclusion Criteria

- Peer reviewed
- Scholarly journals
- In English
- Human Subjects
- Randomized Controlled Trials (RCTs)
- Age of subjects > 18 y/o
- Cognitively intact
- Must include RTR

- No RTR
- Study protocols
- No outcome measures for physical functioning
- Control group not receiving conventional PT

PRISMA



PEDro

Article by Author	1	2	3	4	5	6	7	8	9	10	11	Total score
Chumbler ²	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	8
Russel ³	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	8
Dallolio ⁴	Y	Y	N	Y	N	N	Y	N	Y	Y	Y	6
Salisbury⁵	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	7
Odole ⁶	Y	Y	N	Y	N	N	N	N	Y	Y	Y	5
Tabak ⁷	Y	Y	Y	Y	N	N	N	N	N	Y	Y	5

Results

- PEDro scores ranged from 5 to 8/10 (avg = 6.5)
- Samples ranged from 30 2256 subjects (2590 total)
- Adults aged 18 90
- Diagnoses included:
 - CVA, COPD, SCI, TKA, and various musculoskeletal pathologies
- Relevant aspects of rehabilitation:
 - Assessment
 - Monitoring
 - Intervention (exercise, education, self-applied techniques)
 - Patient education
 - Early identification of complications



Results (cont'd)

Interventions were performed remotely by a PT

- 0.5 to 4 times weekly
- 45 to 60 minute sessions
- 4 to 24 weeks (avg = 9.33 weeks)
- Frequent interventions included stretching, strengthening, gait, mobility tasks and transfers
 - POC was typically individualized
- Outcomes included:
 - Measures of physical function (FIM, WOMAC, SCIM-II, SF-36v2, IKHOAM, steps/day)



Discussion

- No statistical difference (p > 0.05) between the primary outcome of physical functioning gained through RTR compared to conventional PT
- No statistical difference (p > 0.05) of secondary outcomes when comparing RTR to conventional PT, indicating comparable effectiveness
 - Satisfaction of care
 - Quality of life
 - Cost
 - Clinical complications



Conclusion

- Moderate preliminary evidence that RTR is comparable to conventional, inperson services
 - Low PEDro scores due to inability to develop a triple-blind study
- Study findings showed no difference between RTR services and conventional services related to:
 - Objective physical functioning outcomes
 - Satisfaction of care
 - Quality of life
 - Clinical complications
- Ease of technology improved compliance



Clinical Relevance

- Viable, user friendly option
- Valuable tool for intervention and assessment with many diagnoses
- Additional method to improve physical functioning and independence
- Potential to expand
- Consider use for patients who are:
 - Homebound
 - In rural areas
 - Dependent or non-compliant
- Clinical application depends on resources and availability



Limitations

- Wide variety of outcome measures
- Limited clarity of protocols
- Various definitions/types of RTR
- Limited homogeneity between the set-ups of the study



Future Research

- Current research is variable and limited
- New research needed to:
 - Assess full potential of RTR
 - Define optimal protocols and interventions for specific diagnoses
 - Discover most effective RTR communication methods and equipment
 - Investigate cost effectiveness and reimbursement



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References

- Telehealth. APTA. http://www.apta.org/Telehealth/. Published November 7, 2017. Accessed October 15, 2017. 1.
- Chumbler NR, Quigley PA, Li X, et al. Effects of telerehabilitation on physical function and disability for stroke 2. patients: a randomized, controlled trial. J Am Heart Assoc. 2012;43:2168-2174. doi:10.1161/STROKEAHA. 111.646943.
- 3. Russell TG, Buttrum P, Wootton R, Jull GA. Internet-Based Outpatient Telerehabilitation for Patients Following Total Knee Arthroplasty: a randomized controlled trial. J Bone Joint Surg Am. 2011;93(2):113-120. doi:10.2106/jbjs.i. 01375.
- Dallolio L, Menarini M, China S, et al. Functional and Clinical Outcomes of Telemedicine in Patients With Spinal Cord 4. Injury. Arch Phys Med Rehabil. 2008;89(12):2332-2341. doi:10.1016/j.apmr.2008.06.012.
- 5. Salisbury C, Montgomery AA, Hollinghurst S, et al. Effectiveness of PhysioDirect telephone assessment and advice services for patients with musculoskeletal problems: pragmatic randomised controlled trial. Bmj. 2013;346:f43. doi: 10.1136/bmj.f43.
- Odole AC, Ojo OD. A Telephone-based Physiotherapy Intervention for Patients with Osteoarthritis of the Knee. Int J 6. Telerehabil. 2013;5(2):11-20. doi:10.5195/ijt.2013.6125.
- Tabak M, Vollenbroek-Hutten MM, Valk PDVD, Palen JVD, Hermens HJ. A telerehabilitation intervention for patients 7. with Chronic Obstructive Pulmonary Disease: a randomized controlled pilot trial. Clin Rehabil. 2014;28(6):582-591. doi:10.1177/0269215513512495.

Questions?