

# **Wheelchair Training Program for Rehabilitation & Occupational Therapy Students**

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**Dr. Hassan I. Sarsak, PhD, OT**

**March 13, 2018**

# Acknowledgment

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# Acknowledgment

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- **Active Participants** (Department of OT, University of Jordan)
  - ❑ **3<sup>rd</sup> year students**
  - ❑ **4<sup>th</sup> year students**
- This study is dedicated to all **wheelchair users and wheelchair professionals** in our beloved country.

# Outline

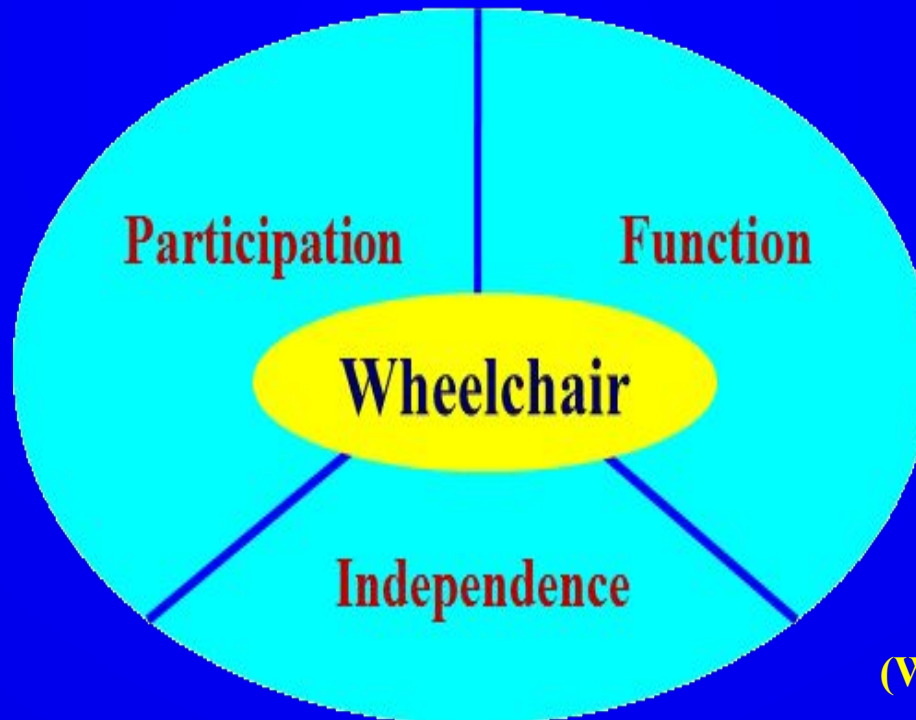
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- **Background**
- **Significance of the Problem “Rationale of the Study”**
- **Purpose of the Study**
- **Methods**
- **Major / Principal Findings**
- **Discussion**
- **Conclusion**
- **Innovation of the Study**
- **Impact on Practice and Clinical Implications**
- **Summary of Study Limitations**
- **Recommendations for Future Research**

# Background

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- **Assistive Technology (AT)** devices enable people with disabilities to function in multiple contexts and activities (Arthanat, Nochajski, Lenker, & Bauer, 2009)
- **The wheelchair** is viewed as one of the most important AT devices used in rehabilitation (Kirby, Swuste, Dupuis, MacLeod, & Monroe, 2002)

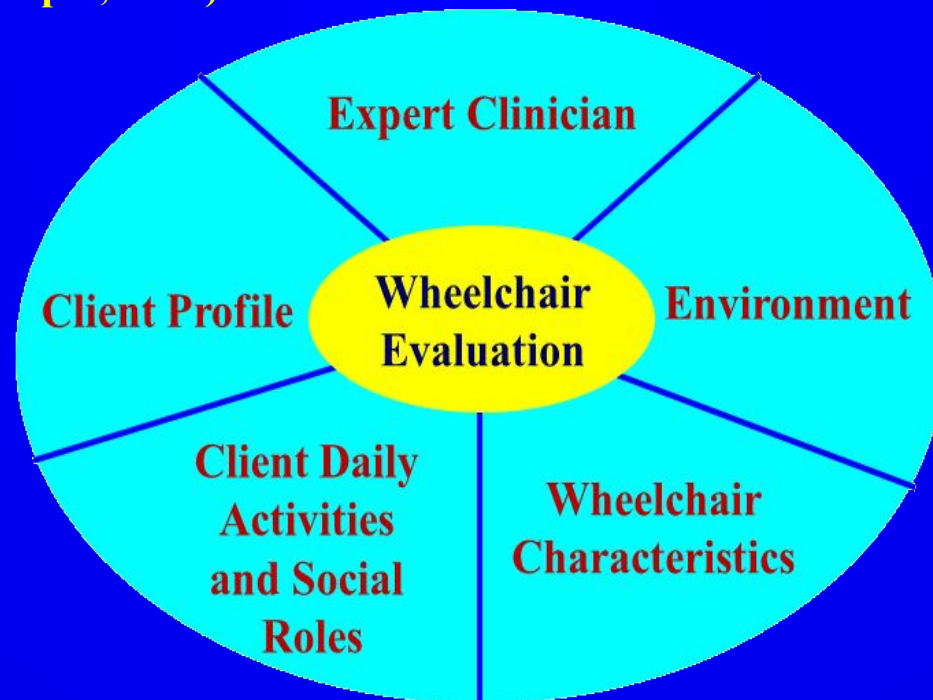


(Wee & Lysaght, 2009)

# Background

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- **Wheelchair evaluation is a continuous process requiring re-assessment of wheelchair fit as users age and their functional conditions change (Karmarkar, Collins, Kelleher, & Cooper, 2009).**



(Oyster et al., 2011)

# Rationale: Significance of the Problem; Worldwide!

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- **70** million people require wheelchairs worldwide;
  - yet only **5-15%** of people have access  
(World Health Organization, 2008)
- A need for wheelchair personnel
- Lack of trained wc professionals is universal
- Furthermore, wheelchair service provision is very underdeveloped across the world



## **Rationale: Significance of the Problem; Worldwide!**

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- **Additionally, people in developing countries often depend on the donation of wheelchairs, which are frequently of poor quality and not customized either for the users or their environment**
- **Health and rehabilitation professionals are not always trained adequately to ensure people with disabilities get a quality wheelchair**  
**(WHO, 2011)**





# Rationale: Significance of the Problem; Worldwide!

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- In addition, there is a great variability and inconsistency in what and how wheelchair related content is taught and evaluated
- A need for global standardization of wheelchair service provision education is crucial;
  - Therefore, standardized training packages were developed by a team of experts around the world by the **WHO** in partnership with **USAID**.
  - WHO training packages serve as guides for wheelchair service provision education worldwide.
  - However, not yet taught in all countries especially in low-resourced countries (**Fung et al., 2017**)



## **Rationale: Significance of the Problem; in Jordan!**

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- **In Jordan, there is a lack of comprehensive wc service provision training**
- **Clinical applications of wheeled mobility and seating interventions are not well-integrated into the rehabilitation curricula at many clinical and academic institutions due to lack of clinicians and faculty interest and expertise**

# **Wheelchair Training Program (WTP)**

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**In response to the need of more competent wheelchair professionals and to enhance the quality of service delivery to wheelchair users, a team of researchers at the Department of Occupational Therapy at the University of Jordan has developed **The Wheelchair Training Program (WTP).****

# WTP: Description

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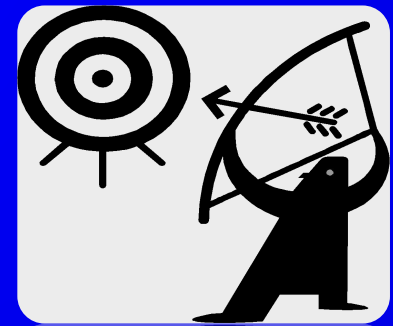
- **WHO packages**
  - ❑ **Basic level (WSTP-b) and**
  - ❑ **Intermediate Level (WSTP-I)**
  - ❑ **Other resources**
- **Appropriate for clinicians with introductory knowledge**
- **Provides fundamentals of wheeled mobility and seating interventions**
- **A minimum of 20 contact hours**
- **WTP Topics**

<b>WTP Topics</b>
<b>1. Seating biomechanics</b>
<b>2. Postural supports</b>
<b>3. Manual, power wheelchairs</b>
<b>4. Seat functions</b>
<b>5. Wheelchair functional outcomes</b>
<b>6. Clinical Implications</b>
<b>7. OT role in wheelchair assessments and prescription</b>
<b>8. Accessibility issues</b>
<b>9. Wheelchair adjustments</b>
<b>10. Wheelchair fitting &amp; Customization</b>

# WTP: Purpose

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For students (**OT, PT, and OP students can benefit from WTP**), to develop knowledge and hands-on skills in the process of identifying and providing wheeled mobility and seating interventions to people of all ages and disability type.



# WTP: Teaching Methods

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- **Evidence-based practice learning**
- **Case-study approach**
  - **Clinical scenarios**
- **Interactive discussions**
- **Direct instruction, PPPs, handouts**
- **Group work**
- **Experiential and blended learning**
- **Simulated interviews**



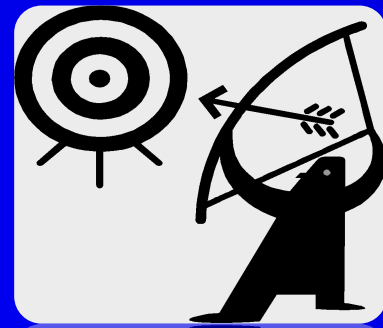






# Specific Objectives of the Study

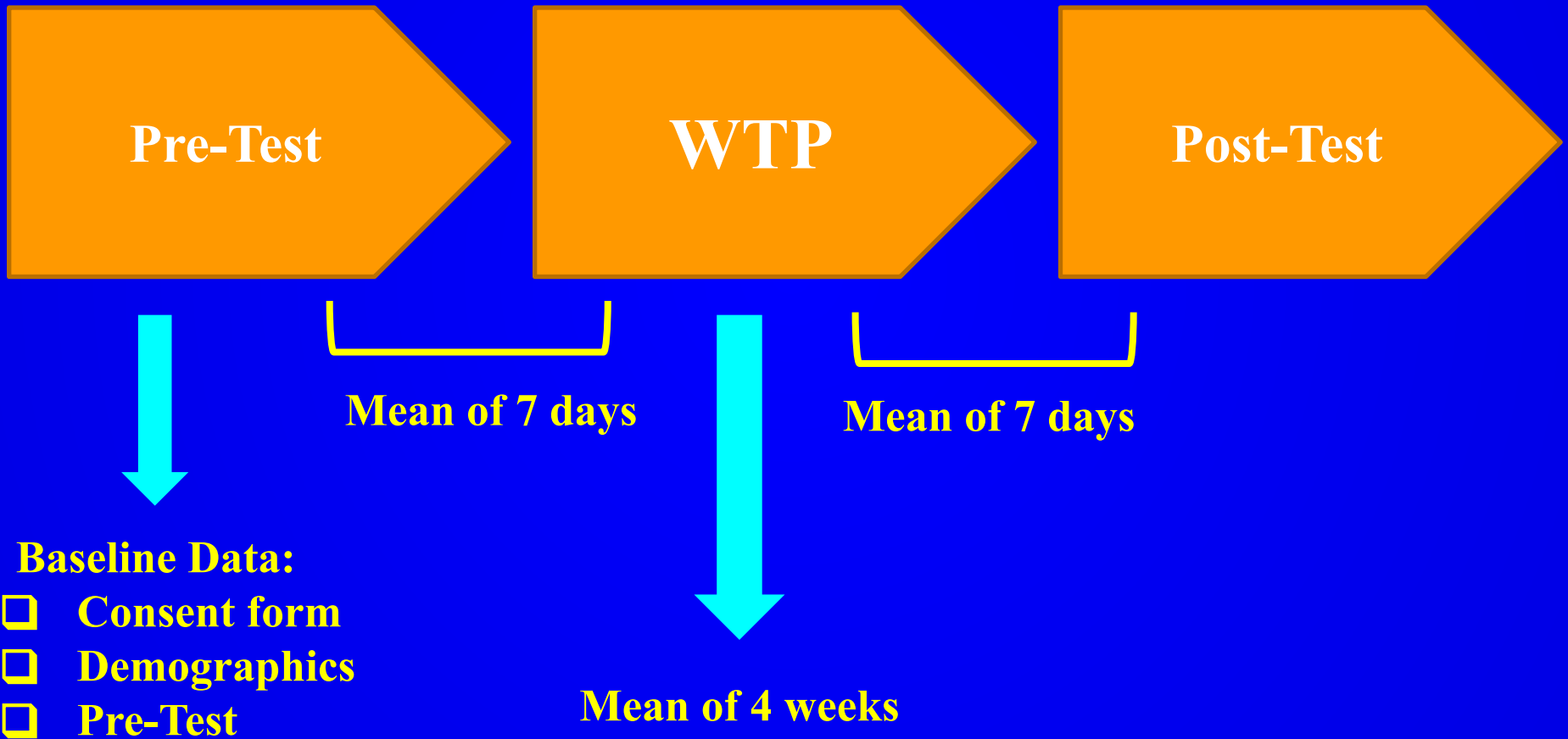
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- Develop fundamental knowledge and the minimum skills required by personnel involved in wheelchair service delivery**
- Get WTP integrated into the regular rehabilitation training programs and curricula such as occupational therapy program at the U of J.**

# Methods (Procedure)

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# Method

## Study Design:

Quasi-experimental

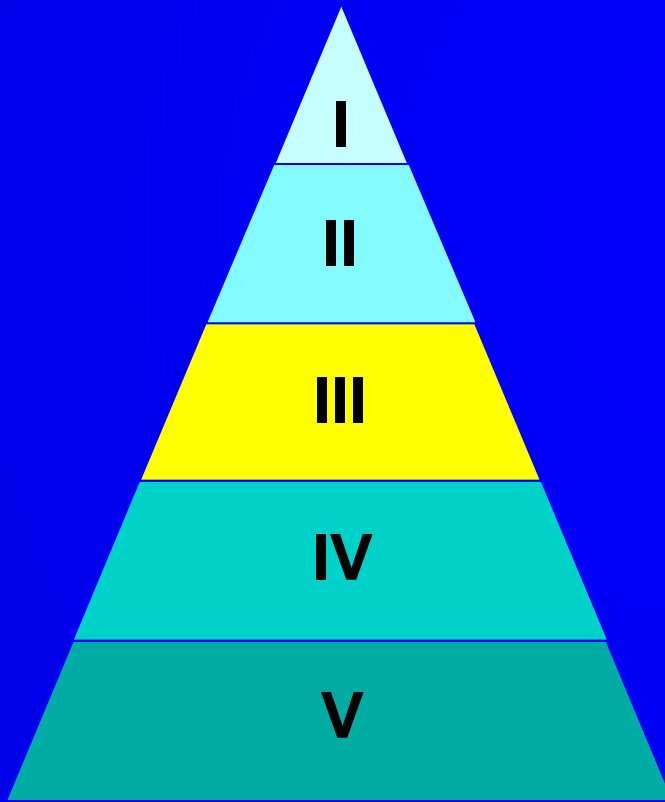
-- One Group (pre-post) research study design

## Instrument:

WTP Test

# Level III Evidence

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**“Evidence from  
well-designed trials  
without randomization,  
single group  
pre-posttest”**

**(Holm, 2001; Moore et al., 1995)**

# Pre-Post WTP Test

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- **Posttest: to measure knowledge improvement and ensure that the WTP provides a successful learning experience**
- **20 MCQs**
  - Paper-based
  - **30** minutes to complete
  - Grade: **10** points
- **Those who completed the WTP and passed the WTP posttest were acknowledged with a certificate of competency and participation.**

# Sample: Pre-Post WTP Test



The University of Jordan  
School of Rehabilitation Sciences  
Department of Occupational Therapy

Wheelchair Training Program (WTP)  
Post-Test (10 Points)

Student name (First, Last Name only): \_\_\_\_\_ Student #: \_\_\_\_\_

Instructions: the length of this test is 30 minutes. Read the following (20) questions carefully. Read all the options and select the one that best represents the correct answer. Transfer your answers to the provided answer sheet. On the answer sheet, make sure you fill out the circle that represents the correct answer completely. Do not fill out more than one circle, if you do so you will get no credit for those double answered questions. Remember to answer all the following questions. Best wishes.

- 1) According to the ADA accessibility guidelines for buildings and wheelchair users; the **maximum** slope of a ramp in new construction shall be \_\_\_\_\_, and the doorways width shall have a **minimum** clear opening of \_\_\_\_\_:
  - A. 1:12 , 34 in
  - B. 1:16 , 32 in
  - C. 1:12 , 32 in
  - D. 1:20 , 36 in
  
- 2) Researchers found that tilt-in-space significantly reduced static seating pressure, a key component in Pressure Ulcer development, and that combining tilt-in-space with backrest recline reduced pressure more than tilt-in-space alone. The biggest reduction in maximum pressure at the ischial tuberosities was found at:
  - A. 45° of tilt-in space and 120° of backrest recline
  - B. 30° of tilt-in space and 100° of backrest recline
  - C. 15° of tilt-in space and 120° of backrest recline
  - D. 45° of tilt-in space and 100° of backrest recline

# WTP Certificate

This is to certify that

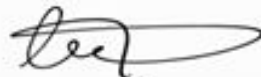
**XXX XXX**

has completed a 20 hour theoretical and practical training in the continuing education program:

**“Wheelchair Training Program for Occupational Therapy Students”**

Completed: October 19, 2017

Department of Occupational Therapy, University of Jordan

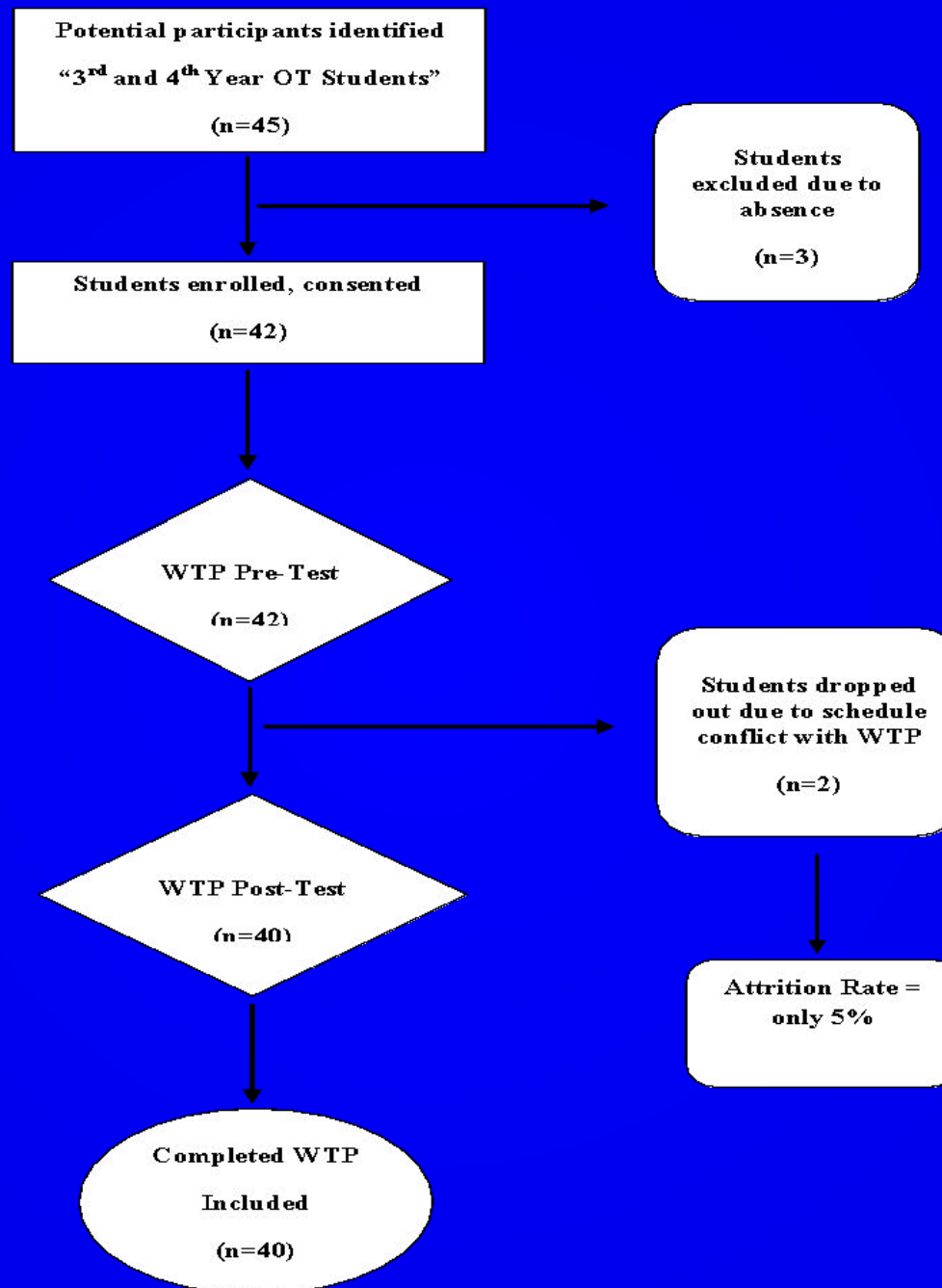


Dr. Hassan Sarsak, PhD, OT



# Study Sample (Participants)

- DAR approval
- Informed consents obtained from students
- **Inclusion criteria**
  - (a) existing undergraduate OT students at U of J
  - (b) 18 years of age or older; and
  - (c) adequate cognitive, language, and handwriting status
- **Exclusion criteria**
  - (a) Students with cognition and language impairments
  - (b) Students with poor handwriting skills due to medical conditions
- Single-center recruitment (U of J)
  - Convenient sample



# Demographics of Students (N=40)

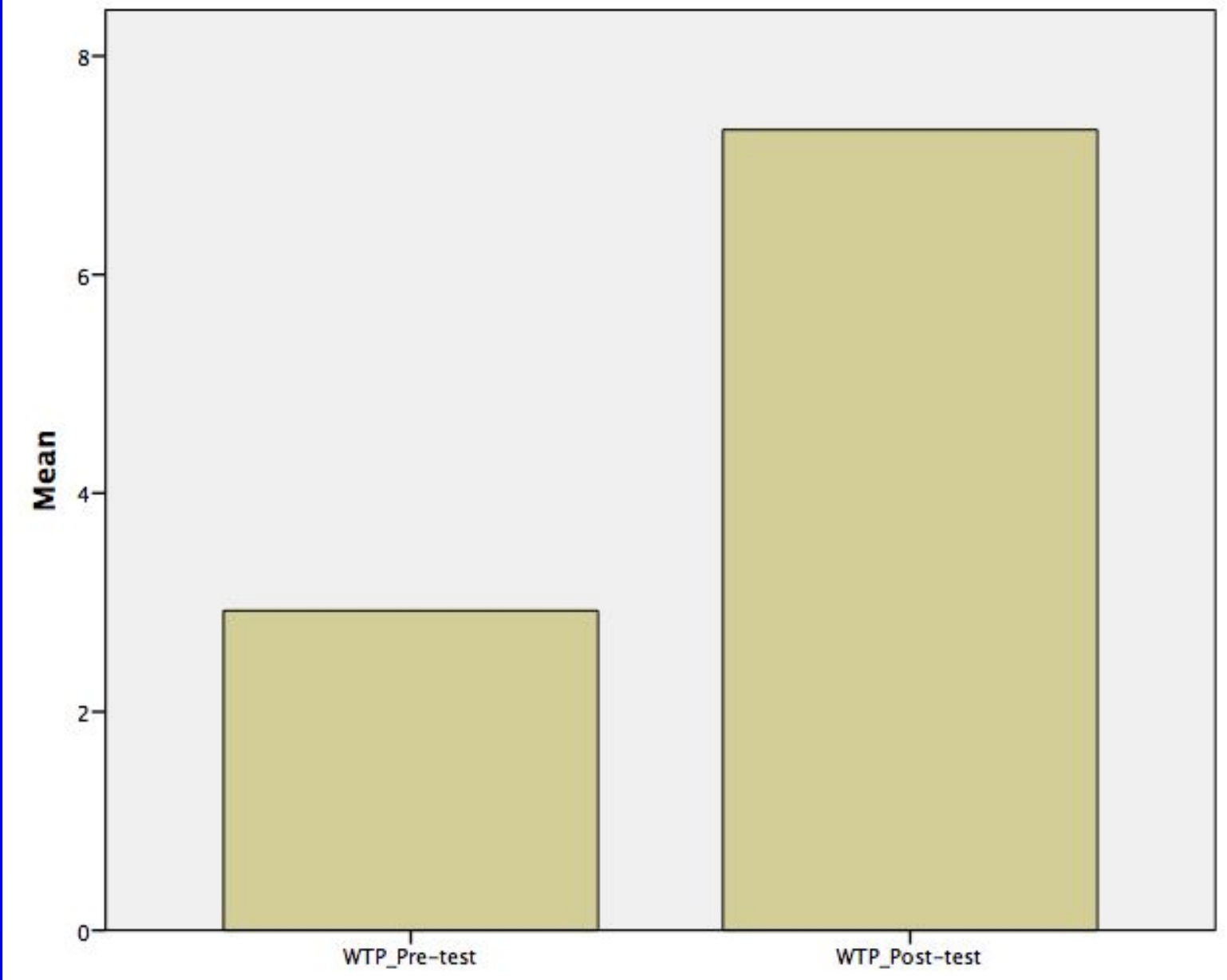
<b>Demographics</b>	<b>Mean (SD) [range]</b>	<b>n</b>
Age (mean, SD) [range]	20.83 ( $\pm 1.49$ ) [19.10 - 27.70]	
Gender Male (n) Female (n)		5 35
Race Jordanian (n) Non-Jordanian (n)		36 4
Years of education (mean, SD) [range]	16.125 ( $\pm 1.36$ ) [14 - 22]	
Independence in everyday life activities Independent (n) Needs assistance (n)		39 1
Experience in wheeled mobility and seating interventions? Yes (n) No (n)		40 0
If yes, how many years of experience do you have? < 1 year (n) 1-2 years (n) 2-3 years (n)		40 0 0



## **Descriptive Statistics (Pre-WTP and Post-WTP Test)**

	N	Mean	SD	Minimum	Maximum	p Value
Pre-WTP Test	40	2.92	1.023	1	4	< 0.001
Post-WTP Test	40	7.32	1.403	4	10	

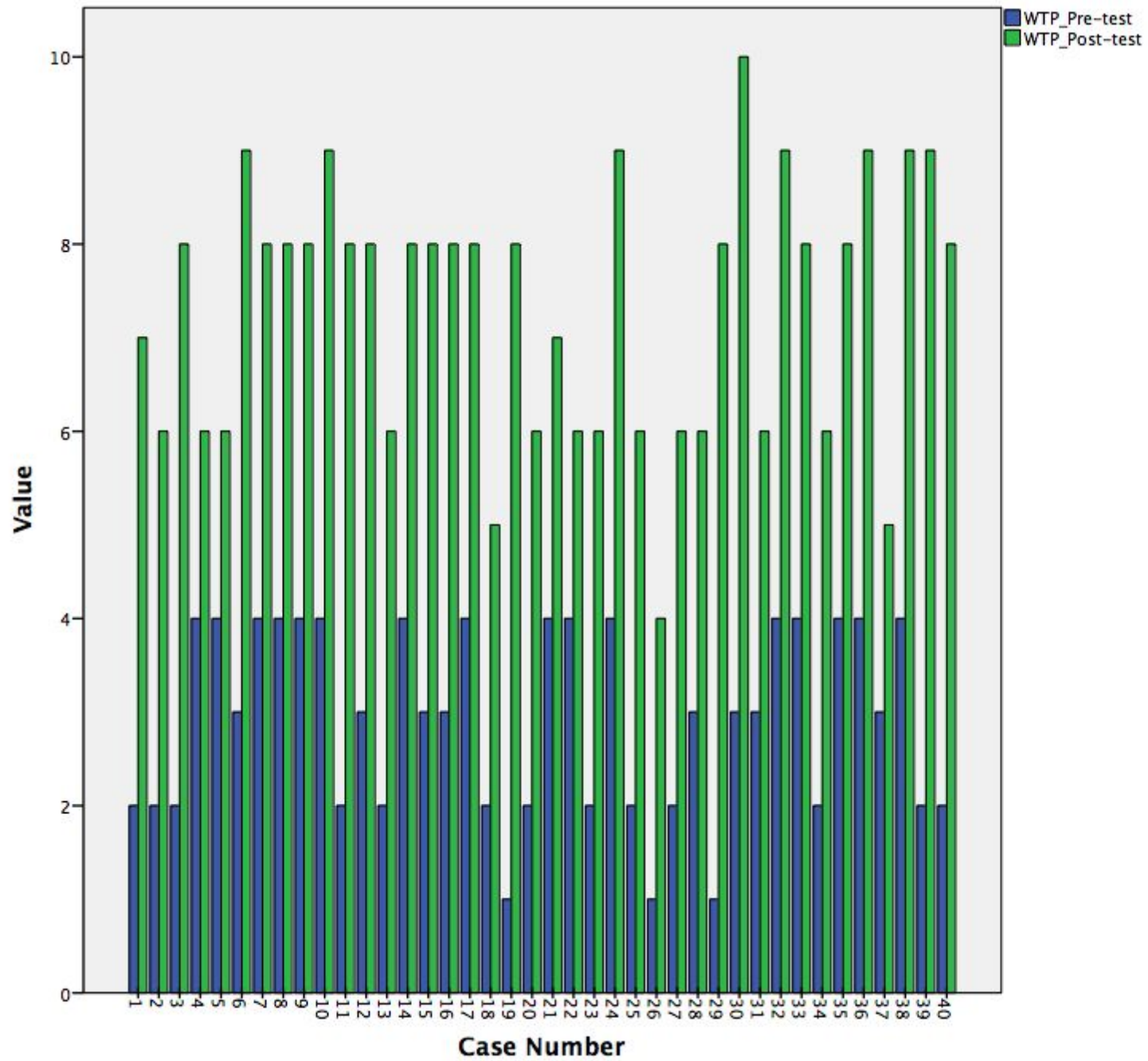
**Pre-WTP and Post-WTP Test Results for all OT Students (N=40)**





OT Students	Average Pre-WTP Score (% correct)	Average Post-WTP Score (% correct)	p Value
<b>3<sup>rd</sup> year (n=31)</b>	<b>2.83</b> <b>28.30 %</b>	<b>7.16</b> <b>71.60 %</b>	<b>&lt; 0.001</b>
<b>4<sup>th</sup> year (n=9)</b>	<b>3.22</b> <b>32.20 %</b>	<b>8.05</b> <b>80.50 %</b>	<b>&lt; 0.001</b>

**Pre-WTP and Post-WTP Test Results for 3<sup>rd</sup> and 4<sup>th</sup> year OT Students (N=40)**



# Discussion

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**Our hypothesis that the Wheelchair Training Program would enhance fundamental knowledge and clinical skills for occupational therapy students was confirmed**

**Overall, 100% of the students in the WTP showed significant improvement in WTP Post-test ( $p < 0.001$ )**



# Discussion

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- **Majority of students indicated an interest in integrating the WTP into their curricula which was offered on an extracurricular and research basis.**
  - **This interest aligns with students' enthusiasm in wheelchair education**
  - **This interest may also reflect the importance of wheelchair service provision education as perceived by students in health professional programs in Jordan.**

# Discussion

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- **From our findings, students received training through WTP acquired the basic knowledge and skills necessary to provide wheelchair service and benefitted from the program**
- **This promising finding suggests an opportunity for WTP to initiate partnerships for the integration of wheelchair service provision education into curricula of other universities in Jordan**

# Conclusions

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- **WTP reported successful learning experience and is useful and helpful and could bring unique information to wheeled mobility and seating assessments and interventions**
- **WTP is a key component of a comprehensive wheelchair basic training and meets the WHO global standards**
- **WTP helps professionals in prescribing properly fitted wheelchairs and may enhance users satisfaction and functional independence**
- **WTP may suggest priorities and focus areas of wheeled mobility and seating interventions**

# Conclusions

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- **WTP, along with the WHO training packages, could serve as a guide for wheelchair service provision education in Jordan.**
- **Results of this study inform the integration of wheelchair education to guide rehabilitative educational curricula development, with the ultimate goal of improving the quality of wheelchair service provision in Jordan**

# Innovation of our Study

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- **To date**, the WTP is the only readily available basic wheelchair educational tool for students that focuses on developing skills and integrating wheelchair training into rehabilitation curricula at universities in Jordan
- **FIRST** to apply the WTP for this purpose among occupational therapy students in Jordan
  - Pilot Study

# Impact of our Study

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- **Providing a better understanding of wheelchair users needs, wheeled mobility assessment, and seating interventions**
- **Enabling practitioners to better understand the person-wheelchair-environment match**
- **Improving the clinical practice for future wheeled mobility and seating interventions through the introduction of the WTP**
- **Positive significant impact on wheelchair users, practitioners and suppliers**

# **Outcomes: Impact of WTP**

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- **Developing skills as a wc professional and evidence-based practitioner**
- **Enhancing quality of wc service provision**
- **Improving independence, safety, and quality of everyday functional performance for wc users in Jordan**

## **Study Limitations**

- **Convenient sample**
  - **From single university**
  - **OT students only**
- **Basic fundamental level**
  - **Pilot study**
  - **Lack of training resources**
    - **No fund**
- **Time limitation**
  - **WTP short duration**  
**“20 hours”**
    - **Due to other curricula demands and university workload**

## **Future Recommendations**

- **Larger sample**
  - **Inclusion of more universities**
  - **Students from other rehabilitation programs (i.e., PT, and OP)**
- **Development of more advanced level**
  - **Grant proposal application**
  - **More training resources**
- **Extended future program**
  - **Expansion to meet recommended # hours**
  - **35-40 h: WHO basic and advanced levels**
  - **CE and follow-up**



# **Future Mission: what is NEXT???**

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- **We are continuing to evaluate the WTP effectiveness following this successful experience**
  - **Satisfaction survey**
- **We are launching an outreach campaign to raise local awareness about quality wheelchair services and the availability of the WTP**
  - Target of these awareness campaigns could be clinical and educational institutions and universities in Jordan
  - **Roundtable discussions at Al Hussein Society in November, 2017 was our first.**
    - **Project: Enhancement of physiotherapy programs through networking in conflict affected countries**

# **Future Mission: what is NEXT???**

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- **Inclusion of wheelchair users**
  - **Get trained on the use of their wheelchairs**
  - **Better understand and meet their needs**
  - **Qualitative focus groups**
- **ISWP support (basic test, online materials, feedback”**
- **Positive significant impact on w/c users who are the first benefactors and the REAL motivation behind all of this!**

# WTP Inclusion in Saudi Arabia: Batterjee Medical College



Batterjee Medical College  
For Science & Technology

OCCUPATIONAL THERAPY PROGRAM MAP

PREPARATORY Year FIRST YEAR		Pre-Clinical SECOND YEAR - OT1				THIRD YEAR- OT2				Clinical FOURTH YEAR- OT3				INTERNSHIP FIFTH YEAR			
Semester One	CH	Semester Two	CH	Semester One	CH	Semester Two	CH	Semester One	CH	Semester Two	CH	Semester One	CH	Semester Two	CH	Internship, Rotation	CH
Human Biology I	4	Human Biology II	4	Anatomy I	3	Anatomy II & Histology	3	Human Growth & Development	3	Upper Extremity Rehabilitation	2	Introduction to Research Methodology	3	Research Project in OT	2	Clinical Fieldwork I: Neuro Physical Conditions	4
General Chemistry	4	Introduction to Biochemistry	4	Physiology I	3	Physiology II	3	Biomechanics	2	Hand Splinting	3	International Trends in Disability & Rehabilitation	2	Community Based Rehabilitation (CBR)	3	Clinical Fieldwork II: Pediatric Conditions	4
General Physics	2	Biophysics	2	Foundations of Occupational Therapy	2	Neuro Physical Cases	2	Applied OT for Neuro Physical Conditions	3	Peds Cases	2	Applied OT for Pediatric Conditions	3	Group Therapy	3	Clinical Fieldwork III: Psychiatric Conditions	4
Mathematics	2	Biostatistics	2	Principles & Ethics in OT	2	OT Techniques	3	Strategies for Independent Living	3	Psych Cases	2	Applied OT for Psychiatric Conditions	3	Special Topics in Occupational Therapy	2	Clinical Fieldwork IV: CBR	4
English I	2	English II	2	Neuroscience	2	OT Theories/Approaches	2	Rehabilitation Psychology	2	Occupational Performance: Assessment/Analysis	2	OT & the Healthcare System	2	Management & Leadership	2	Clinical Fieldwork V: Geriatrics	4
Computer I	1	Computer II	1	Functional Assessment in OT	3	Pharmacology	2	Assistive Technology	2	Wheeled Mobility & Seating Interventions	3	Therapeutic Media in OT	2	OT for Geriatrics	2	Clinical Fieldwork VI: Elect. (Acute Care, Outpatient, School-based Rehabilitation, etc.)	4
Islamic Medical Ethics	2	Arabic Language	2	The Occupational Therapy Process	2					Environment & Disability	2	Fundamental Clinical Skills	2	Professional Documentation for OT Practice Fieldwork	2		
Study Skills I	1	Study Skills II	1														
Medical Terminology I	1	Medical Terminology II	1														
<b>TOTAL CH</b>	<b>19</b>	<b>TOTAL CH</b>	<b>19</b>	<b>TOTAL CH</b>	<b>17</b>	<b>TOTAL CH</b>	<b>15</b>	<b>TOTAL CH</b>	<b>15</b>	<b>TOTAL CH</b>	<b>16</b>	<b>TOTAL CH</b>	<b>17</b>	<b>TOTAL CH</b>	<b>16</b>	<b>TOTAL CH</b>	<b>24</b>

Total Credit Hours 158

# Meet My Team ... 😊

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# References

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**Thank you...**

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# Questions?

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