POTJ | Physiotherapy and Occupational Therapy Journal

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	One Year
India	Rs.5000
All Other Countries	$ 200

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Printed at

R.V. Printing Press
C-97, Okhla Industrial Area
Phase-1, New Delhi 110 020

Corresponding address
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41/48, DSIDC, Pocket-II, Mayur Vihar Phase-I
P.O. Box 9108, Delhi - 110 091(India)
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POTJ

Physiotherapy and Occupational Therapy Journal

April-June 2009

Volume 2 Number 2

Contents

Comparative study on different types of Indian wheel chairs activity and its effect on various parameters in normal subjects

***Arora Manisha, **Narkeesh**

*Student, Master of Physiotherapy (Neurology), Punjabi University, Patiala

** Reader, Punjabi University, Patiala

Abstract

A wheelchair is a wheeled mobility device in which the user sits. The device is propelled either manually, by turning the wheels by the hand/ via various automated systems. In Indian scenario, patients with different injuries due to musculoskeletal or neurological pathology are using wheel chair with different structures without knowing its importance, purpose and efficiency. Also in current status in Indian scenario no study has been done and in other words, least importance has been given to the need of wheelchair. This study will create an effectiveness of wheelchairs according to high sale and low cost availability in Indian market with respect to its effect on different human system parameters like heart rate, blood pressure, temperature, respiratory rate. Method**:** The study involves three types of wheelchairs commonly used by the patients in India-Non-folding standard wheelchair, Light weight folding wheelchair, Commode wheelchair with inclined seat. 30 subjects were taken. Subjects were made to drive wheel chair for a distance of 40 meters. Pulse, respiratory rate, temperature, blood pressure, VAS, rate of perceived exertion was measured before and after driving and results was estimated.

Conclusion: There are significant changes in different parameters of wheelchairs like heart rate, blood pressure, respiratory rate, temperature, pain rating and rate of perceived exertion while driving a wheelchair. And also there is significant relation between different parameters of wheelchairs. The study indicated that light weight folding wheelchair should be recommended to the patients with neurological or musculo-skeletal injuries.

Key words: wheelchair, physiological cost index, cardio-respiratory fitness

Introduction

A **wheelchair** is a wheeled mobility device in which the user sits. The device is propelled either manually, by turning the wheels by the hand/ via various automated systems. Wheelchairs are used by people for whom walking is difficult or impossible due to illness injury/ disability. Even the patient with paraplegia who has mastered ambulation with crutches and orthosis will choose to use a wheel chair on many occasions because it provides a lower energy expenditure and greater speed and safety. The designing of wheel chair should be done taking in concern the comfort and safety and energy requirements for every individual. Appropriate wheelchair seating is an integral part of the overall management of patients with spinal cord injury. It not only determines patient's mobility but also has implication for skin, posture, and pain and contracture management. A basic standard manual wheelchair incorporates a seat and back, two small front (caster) wheels and two large wheels, one on each side, and a foot rest. They are often highly customised for the individual user's needs. The seat size (width and depth), seat-to-floor height, footrests/leg rests, front caster outriggers, adjustable backrests, controls, and many other features can be customized on, or added to, many basic models, while some users, often those with specialised needs, may have wheelchairs custom-built. Although the effort involved in wheelchair ambulation may be insufficient to cause a cardio-respiratory training effect, it can impose a severe physical stress on physically disabled person **engel p. Hildebrandt**). Nevertheless, because the load is thrown on small muscles the heart rate will be higher in the wheelchair user than in a person with an equivalent oxygen intake who is walking

Reprints Requests : Arora Manisha
PG (Master of Physiotherapy-Neurology)
Punjabi University, Patiala, Punjab

(Received on 7.4.09, accepted on 18.9.09)

(**Glaser Rm, Edwards M**). The reduced cardiac capacity of tetraplegics and paraplegics may also be linked to their lower maximal exercise capacity and oxygen uptake.

Parts of wheelchair

Seat, Backrest, Arm-rest, Foot rest, Wheels, Brakes and locks for wheel, Hand rim& Axle. Prior to the purchase and distribution of a wheel chair the following needs to be assessed. Deciding the size – measurement for wheel chair.

Patient position

Fully dressed with all assistive devices on. Sitting on a straight chair having rigid seat and backrest .hip should be flexed at 80 degree knee flexed to 90 degree ankle in neutral, shoulder relaxed and elbow flexed to 90 degree.

Measurements

Height of seat from floor - distance between floor and upper surface of seat + 5 cm (for foot rest elevation) 19 1/2''.Width of seat = outer aspect of left thigh to outer aspect of right thigh + 5 cm, 18''.Depth of seat = back of pelvis to back of knee – 66 cm 16''. Height of foot rest = sitting surface to the bottom of heel 16-20''.Height of chair back = sitting surface to the apex of scapula 16''.Arm rest height = sitting surface to the outer aspect of 90 degree flexed forearm 9 ½''.

Methods

Study was performed on 30 subjects. This was an experimental study based on the comparison between different wheelchair driving namely light weight folding wheelchair, non folding standard wheelchair and commode wheelchair with inclined seat with respect to their effect on human system parameters such as heart rate, blood pressure, temperature, respiratory rate. The study performed co-relation between various parameters and described significant co-relation between them. The study was performed in the Punjabi university Patiala in research lab of Department of Physiotherapy and hand ball ground.

Parameters study were

Body temperature measured in $F^{0,}$ Respiratory rate measured per minute. Blood pressure measured in mm/ Hg, Heart rate measured per minute, Visual Analogue Scale (VAS), Borg scale of rate of perceived exertion, Physiological cost of index

Procedure

Step 1

The subjects were selected on the basis of inclusion and exclusion criteria. Height was measured by anthropometric rod followed by weight measurement by weighing machine.

Step 2

Proper assessment of the subject was done taking into concern muscle length testing, girth measurement, range of motion, sensory assessment.

Step 3

Markings were marked both at starting point and end point. The distance was marked for 40 meters. Now the subject was comfortably sitted on light weight wheelchair which was having proper fittings like arm rest, back rest, brakes, foot rest etc. The subject was asked to remain relaxed before and after the procedure. The procedure was told to patient and he/ she was instructed to drive wheel chair within a range of 3 meters.

Step 4

Readings were taken as

Procedure for measuring **respiratory rate**: Subjects arm was placed across chest and examiner put her fingers positioned as if continuing to monitor the radial pulse. Counting of respirations for 60 sec was done.Procedure for measuring **radial pulse**: Patient comfort was assured. Radial pulse point to be monitored was selected. Examiner puts her first three fingers squarely and firmly over the pulse site. Counting is done for 30 seconds and it was multiplied by 2.Results were recorded.

Procedure for measuring **temperature**: Patient comfort was assured. The equipment required for recording temperature was hand held thermometer. Turn on the hand held digital thermometer. Examiner insert thermometer into subject's mouth at the posterior base of tongue to the right or left of fraenulum. Subject was instructed to close the lips and not teeth. Thermometer probe was held in place for 1 min, until a beep was heard.

Procedure for recording **blood pressure**: Patient comfort was assured. The equipment required of taking blood pressure includes a blood pressure cuff, a sphygmomanometer and a stethoscope. Blood pressure cuffs were secured on the subject's extremity by Velcro. The cuff covers approximately one-half to two-thirds of the subject's upper arm. The cuff was inflated. Initially when pressure was applied in the cuff, the blood flow was occluded and no sound was heard through the stethoscope. As the pressure was gradually released, a series of five phases/ sounds were identified

Phase 1-the first clear, faint, rhythmic tapping sound that gradually increases in intensity; indicates systolic pressure. Phase 2- a murmur sound was heard. Phase 3- sounds become louder and crisp. Phase 4- sound distinct, soft blowing quality; indicates diastolic pressure. Phase 5- sounds disappear, second diastolic pressure.

Step 5

Now the subject was made to drive wheel chair for a distance of 40 meters.

Subject was instructed to remain relaxed during driving. A beep was fired at the starting point when the subject starts driving. The time was recorded while the subject was driving wheelchair with the help of stopwatch. When subject reaches at the end point a beep was fired again to stop it.

Step 6

All the readings were taken again in the same manner as earlier. Help was taken by another person for taking recordings so that with time recordings were not altered and changes in the parameters could be appreciated.

Step 7

Some new parameters taken after reaching the end point include:

VAS: The subject was asked to point markings at vas scale for both right and left upper limb. Borg scale for rate of perceived exertion: The subject was asked to point out markings at Borg scale. The same procedure was applied for other two wheelchairs i.e. commode and non-folding wheelchair

Data analysis and results

	AGE	HEIGHT	WEIGHT	BMI
Mean and SD	20.0666±1.0482	165.2833±6.4603	62.8333±5.9194	22.9506±1.2057

Table 1. Describes the mean and standard deviation of age, height, weight, and BMI of all the 30 subjects who were included in the study.

Parameters	Mean and Standard Deviation	Difference of mean and SD
Pulse-pre	84.6 ± 5.49	
Pulse-post	99.3 ± 6.48	14.6± 0.88
Temperature-pre	97.9 ± 0.50	
Temperature-post	98.3 ± 0.39	0.41± -.1114
Respiratory rate-pre	17.9 ± 2.18	
Respiratory rate- post	23.3 ± 2.53	5.46±0.35
Blood pressure-pre	121 ± 7.92	
Blood pressure-post	126.5 ± 4.93	5.5±-2.98

Table 2. Describes the mean and standard deviation and difference of mean and standard deviation of pre and post test values of pulse, temperature, blood pressure and respiratory rate of light weight folding wheelchair (A).

Parameters	Mean and SD
Time	46.36± 8.45
Velocity	1.15± 0.21
Borg scale	1.03± 0.55
Vas	0.26± 0.52
Physiological cost index	12.11± 4.84

Table 3. Describes the mean and standard deviation and difference of mean and standard deviation of pre and post values of time, velocity, VAS, physiological cost index of light weight folding wheelchair (A).

Parameters	Mean and Standard Deviation	Difference of mean and SD
Pulse-pre	87.2± 4.8947	
Pulse-post	110.2± 9.1704	23.2±4.2757
Temperature-pre	97.8933± 0.5533	
Temperature-post	98.2733± 0.4385	-0.3803±-00.1148
Respiratory rate-pre	17.6666± 1.8631	
Respiratory rate- post	24.7333± 1.9815	7.067±0.1184
Blood pressure-pre	122.667± 6.396	
Blood pressure-post	131.333± 6.8144	8.666±10.35

Table 4. Describes the mean and standard deviation and difference of mean and standard deviation of pre and post test values of pulse, temperature, blood pressure, respiratory rate of non-folding standard wheelchair (B).

Parameters	Mean and SD
Time	115.4± 17.16
Velocity	2.88± 0.42
Borg scale	3.15± 0.88
Vas	3.06± 0.63
Physiological cost index	8.21± 3.56

Table 5. Describes the mean and standard deviation and difference of mean and standard deviation of pre and post values of time, velocity, VAS, physiological cost index of non-folding standard wheelchair (B).

Table 6. Describes the mean and standard deviation and difference of mean and standard deviation of pre and post test values of pulse, temperature, blood pressure, respiratory rate of commode wheelchair with inclined seat (C).

Parameters	Mean and SD
Time	46.36± 8.45
Velocity	1.15± 0.21
Borg scale	1.03± 0.55
Vas	0.26± 0.52
Physiological cost index	12.11± 4.84

Table 7. Describes the mean and standard deviation and difference of mean and standard deviation of pre and post values of time, velocity, VAS, physiological cost index of commode wheelchair with inclined seat (C).

Variables	T-value	P-value
Pulse	-5.40	(p<0.05)
Blood pressure-systolic	-1.97	(p<0.05)
Temperature	-0.13	(p>0.05)
Respiratory rate	-2.81	(p<0.05)
Time	-14.43	(p<0.05)
Velocity	-14.43	(p<0.05)
Borg scale	-11.13	(p<0.05)
Vas	-18.59	(p<0.05)
Physiological cost index	2.83	(p<0.05)

Table 8. Describes the unpaired t-test value and P value of pulse ,blood pressure, temperature, respiratory rate, time, velocity, Borg readings and physiological cost index of wheelchair A and B. P value was found to be significant (p<0.05) except temperature which was not significant (p>0.05).

Variables	t-value	p-value
Pulse	6.35	(p<0.05)
Blood pressuresystolic	3.24	(p<0.05)
Temperature	2.04	(p<0.05)
Respiratory rate	5.47	(p<0.05)
Time	19.76	(p<0.05)
Velocity	19.76	(p<0.05)
Borg scale	11.11	(p<0.05)
VAS	-18.61	(p<0.05)
Physiologicalcost index	-3.54	(p<0.05)

Table 9. Describes the values of unpaired t-test and P value of pulse blood pressure temperature, respiratory rate, time, velocity , Borg readings , and physiological cost index of wheelchair A and B. P value was found to be significant (p<0.05) for all the parameters of wheelchair B and C.

Variables	t-value	p-value
Pulse	1.045	p>0.05
Blood pressuresystolic	-1.09	p>0.05
Temperature	2.70	p<0.05
Respiratory rate	2.01	p<0.05
Time	2.27	p<0.05
Velocity	2.27	p<0.05
Borg scale	-0.23	p>0.05
VAS	1.507	p<0.05
Physiological cost index	0.29	p>0.05

Table 10. Describes the values of unpaired t-test and P values pulse , blood pressure, temperature, respiratory rate, time, velocity, Borg readings and VAS, physiological cost index of wheelchair Band C. P value was found to be significant (p<0.05) for all the parameters of wheelchair A and C except for temperature and readings of Borg scale and physiological cost index which was found to be in significant (p>0.05).

Variables	Df	Friedman value	Significance level
Borg scale	2	63.25	p<0.001
Vas	2	277.56	p<0.001

Table 11. Describes the value of Friedman test for three parameters namely Borg readings, VAS of all three wheelchairs namely light weight folding wheelchair, non folding standard wheelchair and commode wheelchair with inclined seat. The results were found to be significant at p<0.001, for a two- tailed study.

Variables	Sum of squares	D f	Mean Square	F	Sig
Between Groups	1399.4	2	699.7	22.25737	P<0.001
Within Groups	2735	87	31.43678		

Table 12. Describes ONE-WAY ANOVA for pulse. Variables were analyzed both between groups and within groups.

Variables	Sum of squares	D f	Mean Square	F	Sig
Between Groups	119.4	2	59.7	13.40361	P<0.001
Within Groups	387.5	87	4.454023		

Table 13. Describes ONE-WAY ANOVA for respiratory rate. $F_{calculated}$ was found to be significant (13.40361) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to respiratory rate.

Variables	Sum of squares	D f	Mean Square	F	Sig
Between Groups	417.2222	2	208.6111	5.227796	P<0.001
Within Groups	3471.667	87	39.90421		

Table 14. Describes ONE-WAY ANOVA for blood pressure. $F_{calculated}$ was found to be significant (5.227796) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to blood pressure.

Variables	Sum of squares	D f	Mean Square	F	Sig
Between Groups	0.402889	2	0.201444	3.149644	P<0.001
Within Groups	5.564333	87	0.063958		

Table 15. Describes ONE-WAY ANOVA for temperature. $F_{calculated}$ was found to be significant (3.149644) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to temperature.

Variables	Sum of squares	D f	Mean Square	F	Sig
Between Groups	86118.07	2	43059.03	209.4412	P<0.001
Within Groups	17886.33	87	205.59		

Table 16. Describes ONE-WAY ANOVA for time. $F_{calculated}$ was found to be significant (209.4412) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to time taken to cover a distance of 40 meters.

Variables	Sum of squares	D f	Mean Square	F	Sig
Between Groups	53.82379	2	26.9119	209.4412	P<0.001
Within Groups	11.17896	87	0.128494		

Table 17. Describes ONE-WAY ANOVA for velocity which is a measure of distance over time. $F_{calculated}$ was found to be significant (209.4412) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to velocity.

Variables	Sum Of Squares	D f	Mean Square	F	Sig
Between Groups	88.21667	2	44.10833	97.37598	P<0.001
Within Groups	39.40833	87	0.452969		

Table 18. Describes ONE-WAY ANOVA for Borg scale of rate of perceived exertion. $F_{calculated}$ was found to be significant (97.37598) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to Borg readings.

Variables	Sum Of Squares	D f	Mean Square	F	Sig
Between Groups	146.4	2	73.2	204.115	P>0.001
Within Groups	31.2	87	0.358621		

Table 19 describes ONE-WAY ANOVA for VAS. $F_{calculated}$ was found to be not significant (0.0226302) at p< 001. This indicates that there is no relationship between three types of wheelchairs with respect to VAS score.

VARIABLES	SUM OF SQUARES	D f	Mean Square	F	Sig
Between Groups	276.2813	2	138.1407	5.995855	P<0.001
Within Groups	2004.424	87	23.03936		

Table 20. Describes ONE-WAY ANOVA for physiological cost index. $F_{calculated}$ was found to be significant (5.995855) at p< 001. This indicates that there is relationship between three types of wheelchairs with respect to physiological cost index.

Results

The mean and standard deviation of age, height, weight, and BMI of all the 30 subjects who were included in the study were calculated. The unpaired t-test value and P value of pulse (5.40), blood pressure (1.97), temperature (0.13), respiratory rate (2.81), time (14.43), velocity (14.43), Borg readings (11.13), and physiological cost index (2.83) of wheelchair **A and B**. P value was found to be significant (p<0.05) except temperature which was not significant (p>0.05). The values of unpaired t-test and P value of pulse (6.35), blood pressure (3.24), temperature (2.04), respiratory rate (5-47), time (19.76), velocity (19.76), Borg readings (11.11), and physiological cost index (3.54) of wheelchair A and B.

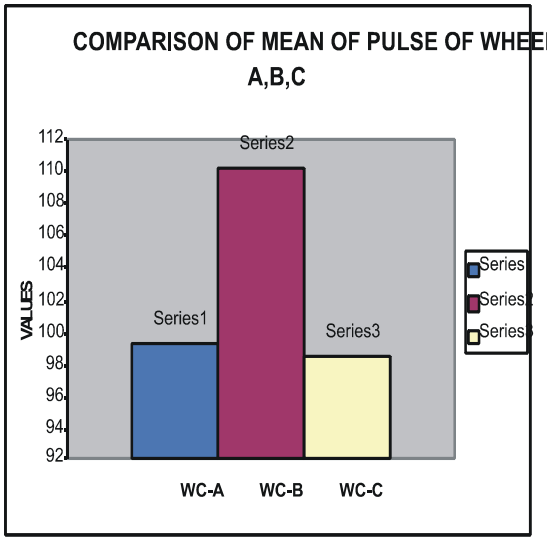

Figure1

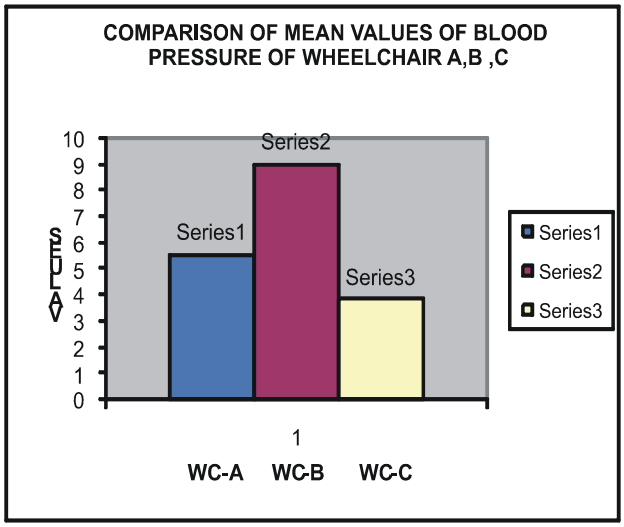

Figure 2

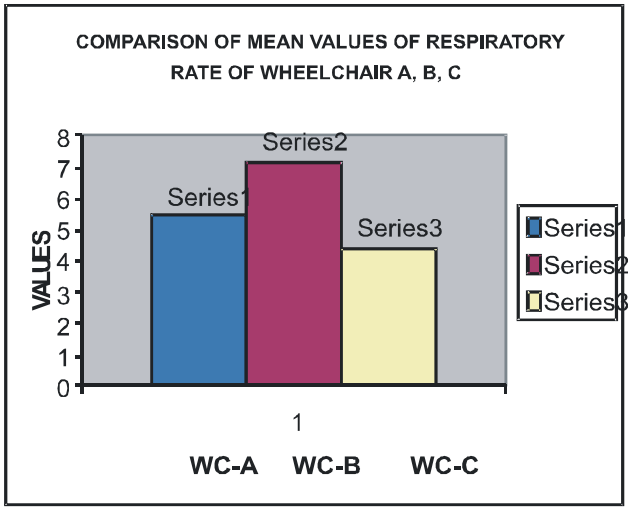

Figure 3

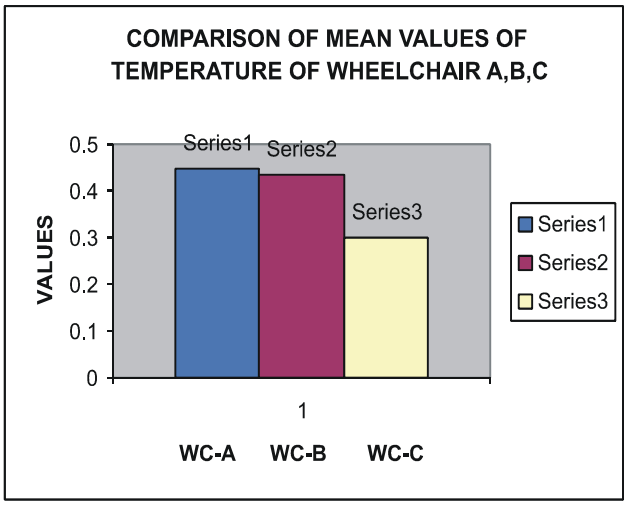

Figure 4

P value was found to be significant ($p<0.05$) for all the parameters of wheelchair **B and C**. the values of unpaired t- test and P values pulse (1.045), blood pressure (1.09), temperature (2.70), respiratory rate (2.01), time (2.27), velocity (2.27), Borg readings (0.23) and VAS (1.507), physiological cost index (0.29) of wheelchair Band C. P value was found to be significant ($p<0.05$) for all the parameters of wheelchair **A and C** except for temperature and readings of Borg scale and physiological cost index which was found to be in significant ($p>0.05$). The Friedman test was applied for Borg readings and VAS and results were significant at $p<0.001$. The ANOVA was applied for pulse, blood pressure, respiratory rate, temperature, Borg scale; physiological cost index, VAS and results were significant at p< 001. Physiological cost index for all the wheelchairs.

Discussion

Based on data analysis it may be observed that wheelchair driving has a significant effect on once cardio-. **Roy j. Shephard** concluded from his study that lack of cardio-respiratory and muscular fitness may lead to physiological problems in disabled persons. Such problems can be detrimental to manual wheelchair use and can hinder rehabilitation efforts. So cardio-respiratory fitness should be determined so that he can save his energy in doing jobs of everyday life. Thus the study shows that there is significant co-relation between all the parameters of wheelchairs and there are significant changes in different parameters such as heart rate, blood pressure, temperature, respiratory rate, pain rating and rate of perceived exertion after wheelchair driving. Thus our alternate hypothesis is accepted which states that there are significant changes in different parameters such as heart rate, blood pressure, temperature, respiratory rate, pain rating and rate of perceived exertion after wheelchair driving. And null hypothesis is rejected.

Enquiry between shopkeeper and patients was done on the basis of highest selling and lowest price wheelchair. The highest selling wheelchair was **light weight folding wheelchair** due to Light weight, Easy foldable, Convenience of easy transport, Easy to be handled by the patient, Can be accommodated in narrow passage., Locking system available on both sides. **Non- folding standard wheelchair** was selected on the basis of lowest price with following factors-Most preferred by patients for stability and comfort as width is more and comfort is there, Helper can easily transport the patient on wheelchair by actively pushing through corridors and ramps, It is used in various household activities

Commode wheelchair with inclined seat was selected on the following basis-More stable, less feeling of fall, Foldable for easy transport, All indoor activities can be easily performed, Plastic commode seat, Toilet activities can also be performed. Other considerations- ease of maintenance, effect of seating, mobility and posture. Weight of the wheelchair locking

system, Comfort ability while seating Cost considerations, Commode attachment. Patient position- fully dressed with all assistive devices on. Sitting on a straight chair having rigid seat and backrest .hip should be flexed at 80 degree knee flexed to 90 degree ankle in neutral, shoulder relaxed and elbow flexed to 90 degree. Measurements: Height of seat from floor - distance between floor and upper surface of seat + 5 cm (for foot rest elevation) 19 1/2''.Width of seat = outer aspect of left thigh to outer aspect of right thigh + 5 cm, 18''.Depth of seat = back of pelvis to back of knee – 66 cm 16''. Height of foot rest = sitting surface to the bottom of heel 16-20''.Height of chair back = sitting surface to the apex of scapula 16''.Arm rest height = sitting surface to the outer aspect of 90 degree flexed forearm 9 ½''.

Conclusion

The study results indicated agreement with the alternate hypothesis which stated that there are significant changes in different parameters of wheelchairs like heart rate, blood pressure, respiratory rate, temperature, pain rating and rate of perceived exertion while driving a wheelchair. And also there is significant relation between different parameters of wheelchairs. Thus the study indicated that light weight folding wheelchair should be recommended to the patients with neurological or musculo-skeletal injuries. Also the study throw light on the structural parameters of a wheelchair such as seat, arm rest, foot rest, brakes, wheels, and commode attachment. The design and mechanics of a wheelchair puts a constraint to the manufacturer and buyer.

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How to publish your journal paper

The Catch 22 in research publishing is that few authors work effectively in the process until after they've published a few manuscripts. The good news is that experienced journal editors and authors are willing to pass on their secrets of success. Here is their best advice.

Have a focus and a vision

Angela M. Neal-Barnett, PhD, of Kent State University and author of the forthcoming book, "Bad Nerves" (Simon & Schuster, 2003), as well as numerous papers in multiple journals believes that the key to successfully publishing an article is to "get a vision"--a reason and purpose for writing. That concept isn't always familiar to academicians who often write because they have to for tenure or promotion, she says. But, she advises, while "academic wisdom [says] 'publish or perish,' ancient wisdom says 'without vision, the people will perish.'"

Once you have a vision, says Neal-Barnett, write it down and keep it in constant view to remind you of your mission.

Write clearly

"There is no substitute for a good idea, for excellent research or for good, clean, clear writing," says Nora S. Newcombe, PhD, of Temple University, former editor of APA's Journal of Experimental Psychology: General.

Newcombe endorses the advice of Cornell University's Daryl J. Bem, PhD, who in Psychological Bulletin (Vol. 118, No. 2) wrote that a review article should tell "a straightforward tale of a circumscribed question in want of an answer. It is not a novel with subplots and flashbacks, but a short story with a single, linear narrative line. Let this line stand out in bold relief."

Newcombe also admits that neatness counts. Though she tries not get in a "bad mood" about grammar mistakes or gross violations of APA style, she says, such mistakes do "give the impression that you're not so careful."

Get a pre-review

Don't send the manuscript to an editor until you have it reviewed with a fresh eye, warns Newcombe. Recruit two objective colleagues: one who is familiar with the research area, another who knows little or nothing about it. The former can provide technical advice, while the latter can determine whether your ideas are being communicated clearly.

Many academic departments form reading groups to review each others' papers, says Elizabeth M. Altmaier, PhD, editor of Clinician's Research Digest: Briefings in Behavioral Science. "New faculty should and can form reading groups

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Comparison of quality of life in premenopausal and postmenopausal women

Nidhi Kashyap

Lecturer, Banarsidas Chandiwala Institute of Physiotherapy, Kalkaji, Delhi

Abstract

Background & Objective: Women in her lifecycle goes through pre, peri and post menopausal phases. During these phases there is a profound change in their quality of life. Quality of life is determined by physical health, psychological health, social relationship and environmental factors.This study aimed to compare effect on Quality of life betwe en premenopausal and postmenopausal women.

Methods: 60 women were taken for this study of which 30 women were in the premenopausal and 30 women were in the postmenopausal phase. All subjects were asked to fulfill WHOQOL-BREF questionnaire which evaluated women for physical, psychological, social and environmental well being.

Results: The results showed that 30% women's perception in Premenopausal period about their overall quality of life is very good as compared to just 6.67% of women's perception in Postmenopausal period. Health satisfaction status is better in premenopausal group where 13.3% of women are satisfied with their health status as compared to just 3.3% in postmenopausal period. The mean score in physical health domain for premenopausal women is 61.4+8.49 as compared to 53.23+9.99 in the postmenopausal period. The Premenopausal (mean score 65.66+9.67) have better psychologicalhealth than postmenopausal women(mean score 58.63+10.68). Also there is better social life and adjusting ability in physical environment during premenopausal period as compared to postmenopausal period.

Conclusion: Based on the findings of the study it is concluded that quality of life in premenopausal women is better as compared to postmenopausal women.

Keywords: Premenopause, Posmenopause, Quality of Life.

Introduction

Quality of life is a multidimensional health concept that is a mainly subjective and may influence the sense of well being and day to day function. The menopause is a physiological event that occurs in all women living beyond the age of 60 years. Postmenopause is usually determined by 12 months of amenorrhea of complete lack of monthly menstruation[1]. During climacteric, ovarian activity declines. Initially ovulation fails, no corpus luteum forms and no progesterone is secreted by the ovary. Later the graafian follicles also fail to develop, estrogenic activity is reduced and endometrial atrophy leads to amenorrhea[2]. Loss of estrogen often causes physiological changes including hot flushes, irritability, fatigue, anxiety, various psychotic changes decreased strength and calcification of bones[3]. It is found that women who experience a long Perimenopausal have a high risk of depression[4].Other changes during Postmenopausal includes lean body mass, increase in the fat mass[5], atrophic changes in estrogen target organs such as breasts, uterus, ovaries and vulva[6]. These symptoms in the Postmenopausal period may affect the quality of life of women adversely. Menopausal women who are physically active, have a better postural stability than those who are not[7]. Thus there is a need to compare quality of life between Pre and Post Menopausal women so that early counseling and physiotherapy plan can be implemented.

Reprints Requests: Nidhi Kashyap

Lecturer, Banarsidas Chandiwala Institute of Physiotherapy, Kalkaji, Delhi

(Received on 27.7.09, accepted on 12.08.09)

Methodology

Sixty women were included in this study. 30 women were in Premenopausal period and 30

in Postmenopausal period. The women were selected from Banarsidas Chandiwala Institute of Medical Sciences and adjacent areas.

Women were in the age group of 40-65 years with Premenopausal women having regular menstruation and Postmenopausal women who have not menstruated within previous 12 months.The mean body weight(in Kg) of premenopausal women was 61.4+ 2.7 and that of postmenopausal women was 63.8+1.6.To find the mental status, Mini Mental State Examination was done and all women scored in the normal range ,with the mean score of 28. Women with serious health problems such as fractures, neurological, gynaecological and psychiatric disorders were excluded from the study. Also, women with surgically induced menopause and women taking hormonal therapy were excluded.A questionnaire known as World Health Organization Quality of Life – BREF(WHOQOL-BREF) was used. The questionnaire was divided into four domains – Physical health domain, psychological domain, social & environmental domains. It consists of 26 questions of objective type.

The questionnaire properly explained to the women and instructions were given to them to answer the questions. The responses thus obtained were recorded.ResultsThe results showed that 30% women's perception in Premenopausal period about their overall quality of life is very good as compared to just 6.67% of women's perception in Postmenopausal period. Health satisfaction status is better in premenopausal group where 13.3% of women are satisfied with their health status as compared to just 3.3% in postmenopausal period. The mean score in physical health domain for premenopausal women is 61.4+8.49 as compared to 53.23+9.99 in the postmenopausal period. The Premenopausal (mean score 65.66+9.67) have better psychological health than postmenopausal women(mean score 58.63+10.68). Also there is better social life and adjusting ability in physical environment during premenopausal period as compared to postmenopausal period.

Tabel 1. Subject's overall perception about Quality Of Life

	NUMBER OF SUBJECTS	GRADING				
		5 VERY GOOD	4 GOOD	3 NPNG	2 POOR	1 VERY POOR
PRE	30	9	16	5	0	0
POST	30	2	14	9	1	0

Pre-premenopausal

Post-postmenopausal

Npng-neither poor nor good

Tabel 2. Subject's overall perception about their Health Status

	NUMBER OF SUBJECTS	GRADING				
		5 VS	4 S	3 NSND	2 DS	1 VDS
PRE	30	4	15	11	0	0
POST	30	1	9	12	1	0

Pre-premenopausal

Post-postmenopausal

Vs-very satisfied

S-satisfied

NSND-neither,satisfied nor dissatisfied

DS-dissatsifed

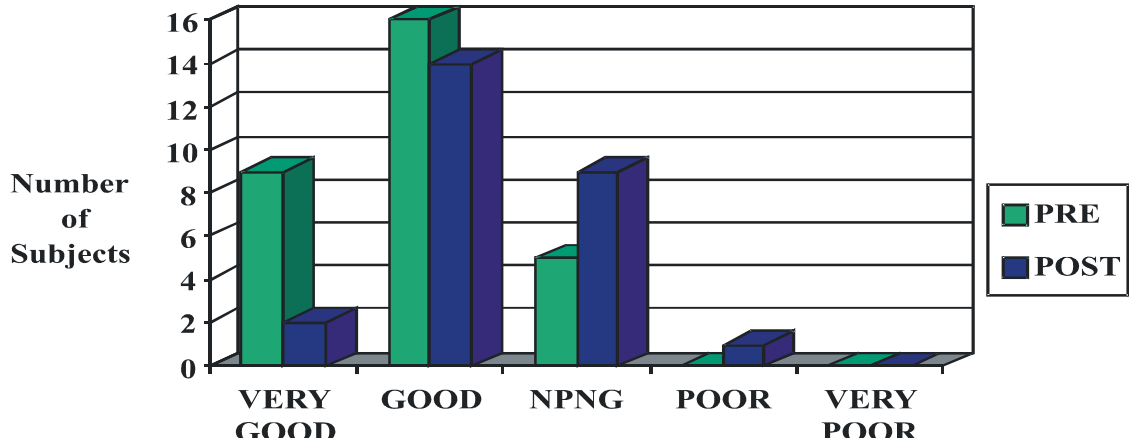
VDS-very dissatisfied

Tabel 3. Comparison of Pre & Post Menopausal physical health domain, psychological health domain, social relationship domain andenvironmental domain

VARIABLE			
	PRE	POST	MEAN
	X(S.D.)	X(S.D.)	DIFFERENCE
PHYSICAL	61.4±8.49	53.23±9.99	8.17
PSYCHOLOGICAL	65.66+9.67	58.63+10.68	7.03
SOCIAL	78.8±13.7	62.63±15.09	16.17
ENVIRONMENTAL	75.4±12.59	70.2±13.96	5.21

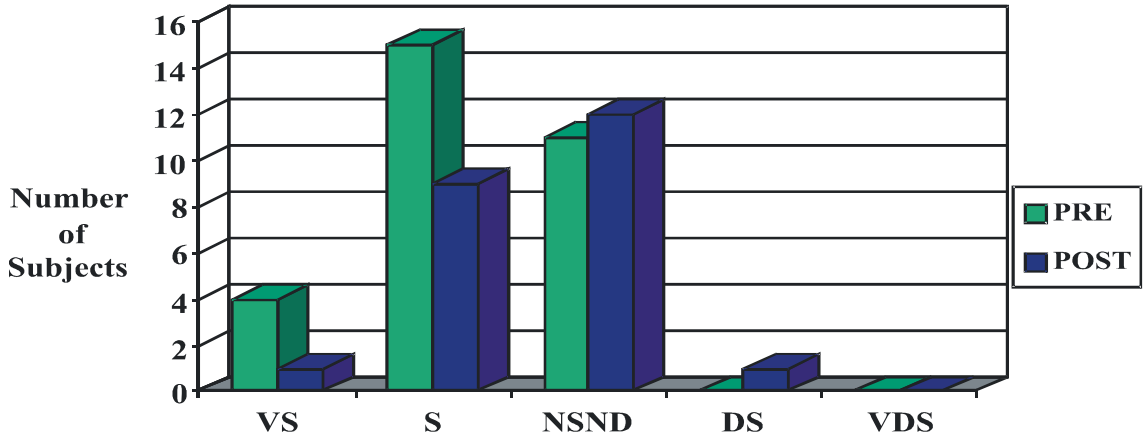
Pre-premenopausal, Post-postmenopausal

Figure 1. Graphical representation of subject's pre & post menopausal quality of life



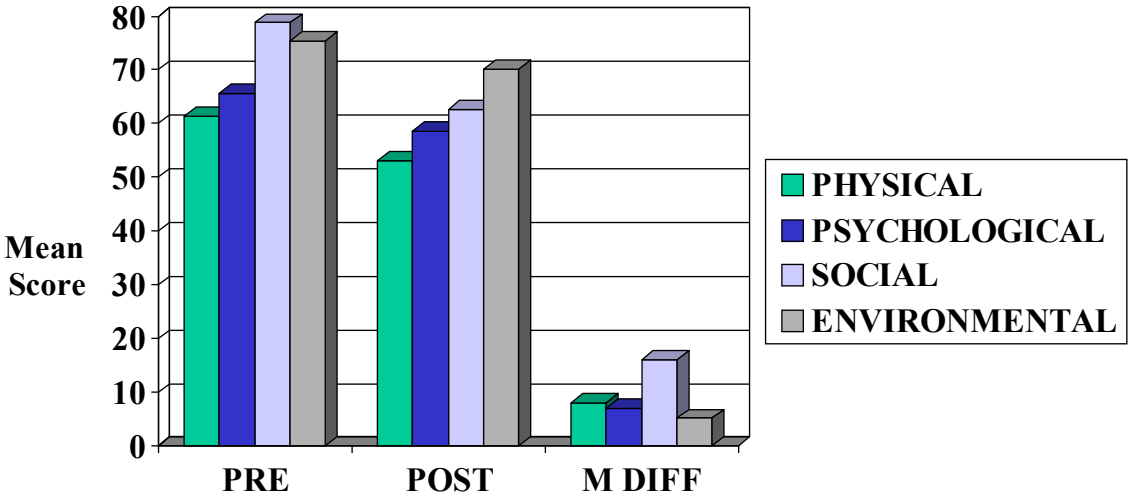
Pre-premenopausal, Post-postmenopausal, NPNG-neither poor nor good

Figure 2. Graphical representation of Subject's Pre & Post Menopausal Health Status



Pre-premenopausal
Post-postmenopausal
VS-very satisfied
S-satisfied
NSND-neither satisfied nor dissatisfied
DS-dissatsifed
VDS-very dissatisfied

Figure 3. Graphical comparisons between scores of different domains



Pre-premenopausal

Post-postmenopausal

M diff-mean difference

Discussion

This study has proved that quality of life in premenopausal women is better than postmenopausal women. The poorer physical role function for postmenopausal women may be associated with estrogen deficiency. There are several symptoms associated to estrogen deficiency which affects physical health such as joint aches, incontinence, osteoporosis and skin changes. These findings are validated by a study done by Duqan SA et al, to examine whether menopausal status is associated with musculoskeletal pain. Results showed that prevalence of aches and pains were high with one in six women reporting daily symptoms.Compared to premenopausal women those who were postmenopausal reported significantly more aches and pains. They concluded that there is an association between pain and menopausal status, with postmenopausal women experiencing greater pain symptoms than premenopausal women[8]. Compromised psychological well being during menopausal transition have long been noted[9]. Women often have a depressed mood accompanied by feeling of worthlessness, anxiety, fatigue, loss of drive, pains and headaches. These symptoms can be attributed to the decreased serotonin activity. Gonadal steroids appeared to affect brain systems known to mediate depression and anxiety on multiple levels.Estrogens exert an agonist affect on serotonergic activity by increasing number of serotonergic receptors and the transport and update of neurotransmitter. They also increase synthesis of serotonin[10].The overall change in physical and psychological health affects the social functioning. This is supported by a study done by Deeks AA et al. They investigated how menopausal stage accounted for women's feeling about their purpose in life, self-acceptance and social role. They found that who were postmenopausal did not feel as positive about their role in life as premenopausal women. This also indicates a decline in their social functioning[11].A study done by Kumari M et al, to examine change in health functioning as the women progress through menopausal transition concluded that menopausal transition is associated with decreased health functioning. Menopausal symptoms are strongly related to all aspects of health functioning with most effect on socio-economic role[12].The decrease in the environmental awareness can be due to decrease in physical health psychological health and decline in social role functioning. Thus this study showed that overall quality of life in all domains is higher in premenopausal women as compared to postmenopausal women. It is recommended that future studies should be conducted on whether early counseling and physical therapy can improve quality of life of postmenopausal women.

Conclusion

The study has shown that quality of life is better in premenopausal women as compared to postmenopausal women. Significance difference is in physical health and social relationship. Thus it can be said that menopause leads to deterioration in quality of life.

WHOQOL-BREF The following questions ask how you feel about your quality of life, health or other areas of your life. I will read out each question to you along with the response options. Please choose the answer that appears most appropriate.

		Very poor	Poor	Neither poor nor good	Good	Very Good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel thatphysical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to youis the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to youis the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very Good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How well are you able to get around?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work ?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are	1	2	3	4	5

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feeling such as blue mood, despair, anxiety, depression?	5	4	3	2	1

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Effect of EMG biofeedback plus stimulation in the functional recovery of hemiplegic hand

Eva Snehlata Kujur

Sr. O.T, National Institute for the Orthopaedically handicapped
B.T.Road, Bon Hooghly, Kolkata-700 090

Introduction

Rehabilitation of the upper extremity in patients who have sustained a stroke poses a major challenge to therapists. In a review of studies on upper extremity recovery , Gowland stated that only 4% to 9% of patients regained normal function , 23% to 43% regained some useful function and 16% to 28% did not have return of any voluntary movement in upper limb[1] .Different treatment strategies for the rehabilitation of hemiplegic patients are available today , such as conventional exercise programs ,PNF, muscle strengthening and physical conditioning programs , neurophysiologic approaches and functional electrical stimulation .Most of these studies have reported that EMG biofeedback can help to achieve improvements even in the chronic state[2].

Feedback is an engineering term defined as a method of controlling a system by re-inserting into it the results of past performance (Moon 1978).Among the most expressive therapeutic advances, those relating to spasticity control need to be acknowledged[3]. Dimitrijevic and Soroker 1994 studied electrical stimulation effects through a wire–mesh glove on upper extremities of hemiplegic patients .The preliminary results indicated beneficial effects such as decrease in muscle hypertonia and facilitation of hand–isolated movements

Relatively little attention has been paid to the potential of effect of EMG Biofeedback + Stimulation in the functional recovery of hemiplegic hand Hence this study was carried out to see the effectiveness of EMG Biofeedback +Stimulation for the functional recovery of hemiplegic hand.

Reprints Requests: Eva Snehlata Kujur
Sr. O.T, National Institute for the Orthopaedically Handicapped, B.T. Road ,Bon Hooghly, Kolkata-700 090

(Received on 18.4.09, accepted on 26.5.09)

Purpose

The purpose of this study was to determine whether there is conclusive evidence regarding the use of EMG Biofeedback + stimulation for improvement in upper extremity function in stroke patients.

Hypothesis

There will be Functional recovery of hemiplegic hand and an increase in the joint range of motion for wrist extension after the application of EMG Biofeedback +Stimulation.

Null hypothesis

There will not be any increase in the functional recovery of hemiplegic hand and an increase in the joint range of motion of wrist extension after the

application of EMG Biofeedback +Stimulation.

Inclusion criteria

1) Inability to perform voluntary motion in the upper extremity following stroke & significant room for improvement in one muscle group.

2) Relatively uncomplicated history.

3) Workable amount of cooperation and attention.

4) No significant visual and auditory deficits.

5) Significant motivation.

Exclusion criteria

1) Flask hemiplegia., 2) Dementia., 3) Deformity of upper limb., 4) Any incidence of receptive aphasia., 5) Any cardiac problem.

Related Literature

Upper extremity hemiparesis is a prominent impairment following stroke and has a significant impact on activities of daily living and quality of life .recovery of upper extremity function is most rapid during the first months after stroke

.However, even 3 months after stroke only 20% of stroke survivors have normal upper extremity function. Accordingly, the majority of stroke survivors report that impaired upper extremity function is a major problem and this is associated with low level of subjective well being[4]. The loss of function in the limb of stroke survivors is the result of lack of inhibition from the higher centers. Some studies (Alfieri,1982:Kraft etal,1992) analyzing FES denoted relief of plasticity and opening of the hemiplegics hand , believing that this fact is due to the mechanism of reciprocal inhibition of the fingers flexion muscles, at the moment when the extensor muscles in hemiplegic patients are stimulated[5] .

There is growing evidence that electrical stimulation has a positive effect on upper extremity motor recovery following stroke. Therefore electrical stimulation might be a adjunct in the rehabilitation of patients with stroke[4]. Emg –biofeedback is not a system of treatment in itself, but a technique that can be incorporated into many treatment programmes.

Biofeedback is a specialized form of feedback that provides information directly to a patient about internal biological mechanisms via a sophisticated electronic device. To quote John Basmanjian (the " Father" of EMG Biofeedback), biofeedback is the technique of using equipment (usually electronic) to reveal to human beings some of their internal physiological events ,normal and abnormal, in the form of visual auditory signal in order to teach them to manipulate these otherwise involuntary or unfelt events by manipulating the displayed signals[6].

Feedback may facilitate plastic changes within the central nervous system. Mechanisms that might be invoked include one or more of the following elimination of active inhibitory influences, unmasking of existing pathways to sub serve functions, development of new movement strategies , transfer of function to intact neural structures , use of alternative pathways or sprouting of collateral axons to form new synapses[7].

What is the mechanism of EMG-biofeedback?

A nerve impulse arriving at the neuromuscular junction triggers a wave of depolarization In the muscle fiber membranes .The sum of muscle fiber action potentials from all fiber making up a motor unit is called a motor unit action potential (MUAP) .With increasing contraction in a normal muscle, more motor units are recruited and the firing rate of each unit increases .With increasing contraction in a normal muscle, more motor units are recruited and the firing rate of each unit increases. The increase in motor unit action potential can be detected through surface electrodes over the muscle [3].

Those clients with neurological disorders are the most difficult to treat because of the complex nature of their multiple symptoms. The presence of weakness, flaccidity, spasticity, or a combination of these three conditions as well as dysphasia, cognitive impairment or neglect syndrome challenges the therapist to develop a creative means to efficiently and effectively rehabilitate the client through the years.

Motor control requires information from the external world as well as proprioception. In motor learning feedback and practice are considered to be the most important. Feedback can be intrinsic or extrinsic. Intrinsic feedback is the body's internal feedback mechanism which uses visual, auditory, vestibular and proprioceptive mechanisms. Extrinsic feedback is any feedback devised from any external source. The goal of biofeedback is to improve motor performance by facilitating motor learning .This concept can be effectively incorporated with a combination of stimulation and biofeedback[5].

Electrical stimulation provides effective joint positioning by eliciting activity from weakened or inactive muscle groups. Electrical stimulation has the potential to strengthen these muscles when volitional activation is present. Electrical stimulation may facilitate neuromuscular re-education as well, the stimulation provides added afferent information to the central nervous system with attention to task and attempts to volitional activation, this afferent input may contribute to neuromuscular re-education of stimulated area[8].

When the afferent nerve is stimulated, the A alpha fibers are reflex stimulated and as a result the muscle contracts. Initiation of voluntary contraction takes place through primary

activation of the small motor neurons to set up a stretch reflex and bring about activation of the alpha neurons[9].

Depending on the instrument available , an individual who receives joint position feedback seem to improvement in torque production about the treated joint , in patterned range of motion and selective range of motion. Because joint position feedback trains motion, those patients lacking active motion about an individual joint are unable to take advantage of this approach. For the latter population, neuromuscular stimulation should be incorporated with EMG biofeedback, rather than positional feedback, thereby rendering to changes in muscle activity that are insufficient to initiate joint motion[10].

Review of literature

1) Mroczek etal 1978 in his study EMG feedback and neuromuscular retraining in hemiplegia came with the following conclusions. Biofeedback is an effective training modality and vital to motor function. It was also noted to be an effective incentive to learning by virtue of its technologic and cultural attractiveness to the subject population[11].

2) Basmanjian etal in 1982 in his study assigned an integrated behavioral physical therapy treatment including EMG Biofeedback to the experimental group and a standard physical therapy program of little duration and intensity to the control group both patients showed clinically significant but the experimental group showed better results[12].

3) Honer etal performed a case study to describe the use of EMG Biofeedback training to disrupt the synergistic patterns of upper extremity in a hemiplegics patient 1yr post stroke. The finding suggested failure of EMG training to promote deviations from an upper extremity synergy pattern in an individual[13].

4) A survey by Weerdt etal 1985 on the use of biofeedback for stroke patients concluded that it can be used as an adjunct to endorse a range of other treatment technique[3].

5) Wolf etal 1983 examined the effect of EMG Biofeedback treatment protocol on qualified changes in neuromuscular measures and functional activities among the treatment of 22 cases chronic stroke patients. Its results concluded that EMG Biofeedback can be beneficial in restoring improved upper extremity function among chronic stroke patients[6].

6) Francisco etal 1998 conducted a study EMG triggered neuromusmuscualr stimulation for improving the arm function of acute stroke survivors .He concluded that there is an effective in increasing arm function[14].

7) Carraugh etal 2000, in his study chronic motor dysfunction in stroke , recovering wrist and finger extension by EMG triggered neuromuscular electrical stimulation, conclude that the instrument is a effective means for therapeutic purpose[15].

8) Armagaon etal 2003 evaluated the efficacy of biofeedback treatment in the functional recovery of hemiplegics hand .It was evident that EMG Biofeedback when used as an adjunct to therapy , resulted in improvement in upper limb of motion and muscular strength[2] .

9) Kroon etal 2004 conducted a study on relation between stimulation characteristics and clinical outcome in studies using electrical stimulation to improve motor control of the upper extremity in stroke.

The study indicates no relationship between the specific setting of stimulation, subject characteristics and clinical outcome[9].

10) Dursun etal 2004 in there study on Effects of Biofeedback treatment on gait in children with cerebral palsy ,concluded that children with cerebral palsy and dynamic equines deformity may benefit from Biofeedback treatment for ambulation[16].

Methodology

Design

The design is a different subject experimental

Setting

The study was conducted in the Occupational Therapy Department of N.I.O.H., Kolkata.

Subjects

A total of 30 subjects with mean age group of 57yrs participated in the study. Subjects were included in the study only after taking individual consent.

Instruments /Scales Used

1) Biofeedback Instrument, 2) Action Research Arm test, 3) Goniometer, 4) Brunnstrom stage of motor recovery,

Assessments

Basic information of all the patients was taken (demographic data, history, motor evaluation, evaluation of hand function, functional evaluation and ADL evaluation was recorded), for referral. Specific assessments required for the study were Brunnstrom stages of hand recovery, Goniometric measurement for active selective range of motion of wrist, and action research arm test. Subjects were also assessed for the ability to follow simple instructions by administering a part of mini mental status examination.

Experimental group

Experimental group received EMG Biofeedback +Stimulaton for wrist extensors and finger extensors. Subjects were also provided with the conventional Occupational therapy.

Control group

Control group received only the conventional Occupational Therapy for 20 sessions.

Procedure

Duration of treatment

Total of 30 minutes session, 15 minutes each for wrist extensors and finger extensors with a in between phase suitable to the patients compliance to the the program.control group underwent the conventional therapy for one hour each day for 20 sessions

Treatment, Relaxation

1) Relaxed position is determined, the patient is asked to maintain the reduced EMG activity as he performs various motions with opposite extremity.

2) Conversations with the patient may be used by therapist as a measure of the patients ability to maintain the relaxed state while his attention is diverted.

3) patient is asked to maintain a relaxed state during a full passive stretch of the involved muscle.

Position

Shoulder flexion-10* to 15*, Abduction-20* to 25*

Elbow flexion-10* to 15*.,Wrist flexion - 1 (Maximum), Finger flexion - Maximum [17](Kelly)

Electrode application

Select the muscle to be monitored.

Prepare the skin site by cleaning with spirit for application of electrodes over the muscle bellies of wrist extensors the for the muscle belly for finger extensors.

Electrodes spacing is 3.5 cm to 5 cm.

Arc of motion

The wrist extensors and finger extensors were monitored only after relaxation of flexors of the wrist and the fingers .If too much flexor activity ws evident, subjects were targeted for smaller arc of motion with success in smaller range of motion, larger arc of motion was aimed.

Parameters

The parameters used for each patient were adjusted to produce the most harmonious movement possible .Width of pulse varied between 100 micro se to 200 micro sec and the frequency varied between 40 hertz to 50 hertz.A

Long ramp on time is used to avoid activating of stretch reflex in a spastic antagonist.

During the biofeedback session which was in the protocol the patient was asked to contract the wrist extensors and the finger extensors voluntarily

Results:

The data was analyzed by spss software. The results indicated an improvement in the joint range of motion of wrist extension, the control group achieved 2% improvement in range in experimental group 25% improvement was seen. Not much difference was observed on the affect on improvements in joint range of motion by the stage of recovery. The results are tabulated in table.

DEMOGRAPHIC AND CLINICAL FEATURES PF SUBJECTS

	EXPERIMENTAL GROUP(n=15)	CONTROL GROUP (n=15)
Age/yr	57 ± 10.53	57 ± 11.27
Male /Female	13/2	10/5
Duration of stroke (months)	36/09	36/4
Stroke type,inf/hem	7/7	6/7
Side of hemiparesis (R/L)	9/5	9/4

Table 1

Table 2. Correlation of stage of recovery and we JROM

N	BRUNNSTORM STAGE OF RECOVERY	% 0F IMPROVEMENT IN JROM OF WRIST EXTENSION
30	2-3	13.6%
	3-4	14.6%
	4-5	40%

There remained a tendency for total ARAT score to be improved in the experimental group; however this difference was not statistically significant between the two groups.

P=0.24

Discussion

The hypothesis that there will be an improvement in the functional recovery of upper extremity in the stroke patients was not justified as the results were not significant at p=0.24. Studies by Lourecao etal leads to conclude that use of FES on upper extremity should be at least for 6 months, when applied twice a week. Probably the duration of treatment was not long enough; this may justify the insignificance in the recovery of upper extremity function. There was an improvement in the joint range of motion of wrist extension in both the groups but the experimental group cited better results. Feedback may facilitate plastic changes within the CNS[7] .Basmanjian etal in his study states that studies on new therapy for upper limb function in stroke patients should be done at the IIpost stroke in patients who show greatest promise. And as most patients in the study did not belong to the acute stage it may be suggested that this may be one of the reasons for the insignificance in the results[12].

There was not much difference in the wrist extension range of motion in between the stage group 2 to 3 and 3 to 4. This is supported by Armagaon etal, 2003, who in their study revealed similar results. This may be because electrical stimulation has combination of effects including those at the level of muscle and also a central effect associated with improved motor relearning. However the subjects in stage 4 to 5 achieved 40% improvement[2]. Kroon etal 2005 states although there not direct evidence electrical stimulation provokes motor activation and is associated with cutaneous , muscle and joint proprioception feedback .It may be that patients belonging to stage 4 to 5 get more muscle and joint proprioception feedback which adds to the better improvements in joint range of motion.

Conclusion

The study provides conclusive evidence regarding the use of EMG Biofeedback + stimulation for improvement in upper extremity function in stroke patients .The study did not show statistically significant differences, therefore it may be that the estimated size was small, hence future studies are recommended with a larger sample size. Studies may be conducted to see whether lesion site has any correlation to improvement in upper extremity function and joint range of motion for wrist extension as a result of the therapy[10].

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Study approaches adopted by physiotherapy students

***Venkadesan R, *Gunjan Vermani, *Smati Sambyal, **Sanjiv Duggal, ***Monica Gulati**

*Lecturer, **Senior lecturer, ***Dean, School of Applied Medical Sciences

Lovely Professional University, Jalandhar-Ludhiana G.T Road, Phagwara-144402, Punjab

Abstract

A Study approach adopted by students varies from one student to another. Meanwhile teaching methodology, lecturer's guidelines as well as criteria for obtaining high marks in examination control the students learning approach. This study used to find out the relationship between study hours, family income, part time job and academic results with study approach. Biggs' Study process questionnaire was used to analyse the study approach adapted by Physiotherapy students. Total of 100 BPT and 17 MPT students of Lovely Professional University were recruited for this study. The data were analysed in relation to student's academic scores, part time jobs, family income and study hours. Results of this study showed that 59% of Physiotherapy students adopted deep achieving, 20% Deep and 19% superficial study approach. From this study majority of physiotherapy students adopted a deep-achieving learning approach that means they are willing to obtain higher grades but their family income, part time job and study hours did not correlate with their study approach except academic scores.

Key words: Superficial approach,deep approach, deep achieving approach, Physiotherapy

Introduction

The aim of education is that students learn. Tertiary education should no longer be a process involving only knowledge transfer, but more importantly an understanding of the manner in which the knowledge is acquired by the students should be developed through close monitoring and supervision by the lecturer[1]. Students seem not to adopt universally similar approaches to studying for their courses, and the learning which results seems to vary dependent upon those approaches[2]. Surface approach motive is extrinsic; it is to carry out the task because of either positively or negatively reinforcing consequences. The student is willing to engage in learning tasks and pass minimally either because life will be even more unpleasant if he does not, or he/she wishes to gain a paper qualification with minimal trouble or effort. Surface motivated students focus on what appear to be the most important topics (as defined by examination) and aim to reproduce them. Because of this focus they do not see interconnections between elements, or the meanings and implications of what is learned. Deep approach motive is based on intrinsic motivation or curiosity; the strategy arising from curiosity is to seek meaning. When a deep approach is adopted, there is a personal commitment to learning, which means that the student relates subject material to personally meaningful contexts or to existing prior knowledge, theorizing about what is learned, and deriving extensions and exceptions. Whereas the deep achieving motive is similar to the surface

Reprints Requests: Venkadesan R.

Department of Physiotherapy

Lovely Professional University

Jalandhar-Ludhiana G.T Road

Phagwara-144402, Punjab

(Received on 01.09.09, Accepted on 3.10.09)

approach in that it is focused on a product, in this case the ego trip that comes from obtaining high grades and winning prizes. The general strategy is thus to maximize the chances of obtaining high marks. While this may lead to optimal engagement in the task (as does deep strategy), such engagement is the means, not the end (unlike deep strategy); the mature of the engagement really depends on what earns the most marks[3]. Physiotherapy services occurs in a wide variety of settings that include health organisation, private practices, nursing homes, schools, community settings, sports clubs, and in work place[4] . Early access to Physiotherapy has been reported to have far- reaching benefits of reduced medical costs, improved patient satisfaction, enhanced recovery time, and reduced sick leave, prevention of chronic problems, and reduction of the total amount of physical therapy needed [5]. Physiotherapist's autonomous practice incurs broad responsibilities and raises concerns regarding the delivery of safe, competent, and appropriate patient care [5]. By the nature of their role, physiotherapists frequently develop a close physical relationship and an emotional attachment with their patients that is often unique with in the healthcare sector[6]. Reinertsen proposed that there are three ways to loose our autonomy: (1) create a culture that tolerates mistakes and does not deal effectively with colleagues who fail to fulfil their professional obligations; (2) don't follow the evidence; and (3) permit unwarranted practice variation [7].

Physiotherapy students were asked to complete the Biggs' Study Process Questionnaire (Biggs 1987) which identifies their study approach. Hypothesis states that if most of the students adopted either deep approach or deep achieving approach the learning environment is more suitable whereas the majority of students who adopted superficial approach then the learning environment or teaching methodology need to be changed. Physiotherapist needs more knowledge about the patient conditions and evidence based physiotherapy treatment for autonomous practice. The present study which deals with approaches adopted by physiotherapy students so that they can have proper counselling and can become qualified Physiotherapist.

Methodology

The students were asked to fill the informed consent and English version of the Study Process Questionnaire was given to the Physiotherapy students. The original instrument consists of 42 items. It is a 5-point response scale. These response scales were.

5 = always or almost always true (of me).

4 = frequently true of me.

3 = true (of me) about half the time.

2 = sometimes true (of me).

1 = never or only rarely true (of me).

The average marks of the student's current semester, study hours, total family income and involvement in part time employment were recorded. The predominant study profile was identified after processing the raw scores of the Study Process Questionnaire. Analyses were carried out by using SPASS software.

Results

Demographic data

Table 1. Demographic data of gender

100 BPT & 17 MPT students were inducted into this study. BPT students were between 17 to 21 years of age and MPT students between 22 to 25 years.

Table 2: Demographic data of Study approaches

Fifty-nine percent of the students adopted deep-achieving approach .Twenty percent of the students adopted deep approach. Where as only 19% of the students adopted a surface predominant study approach. 60 percent of the students' total family monthly income (from parents) was more than 1.5 lakh (INR). None of our students have a part time job which requires devotion of at least 3 hours per week of their time.

Study hours and Academic scores

The amount of time the student spent in studying, excluding sleep and college contact hours, ranged from as little as 2hrs to as much as 6hrs.

Graph one shows very week positive relationship between study hours and percentage results. The value of r = 0.19196. Line of best fit is Y = 0.6989x + 64.17 was shown in the graph. Standard error was 0.4240. Graph two shows very week negative relationship between study hours and percentage results. The value of r = -0.1376. Line of best fit is Y = -0.5296x + 67.46 was shown in the graph. Standard error was 0.898. Graph three shows week positive relationship between study hours and percentage results. The value of r = 0.3817. Line of best fit is Y = 1.687x + 55.80 was shown in the graph. Standard error was 0.8710.

Study approach and academic scores

Analysis showed that there was a significant correlation (r= 0.7520) between the academic scores and study approach.

Conclusion

Findings of this study is similar to the one reported by Alice Yee-men Jones (1991)[1] except the relationship between academic score and study approach. This may be due different target population which includes all year students of BPT and MPT instead of only the students of BPT 2nd year. Results of this study showed that 59% of Physiotherapy students adopted deep achieving and 20% of students adopted deep achieving approach that means they are willing to maximise understanding of the subject matter and the present environment is more suitable for learning. Although these students appear to be more organised in their studies their family income, part time job and study hours did not correlate with their study approach. Every universities should conduct induction programme for first year students regarding teaching methodologies, assignment preparation and evaluation procedures so that students critical analytical thinking will be encouraged. Josef et al 2005 proposed that therapist is having more responsibilities in case of autonomous practice and Reinertsen said that who fail to fulfil their professional obligation and evidence they will loose their autonomy. Apart from this, teacher has to evaluate academic score through continuos evaluation and has to give counselling individually to the students who adopted superficial approach so that professional obligation can be promoted.

Appendices

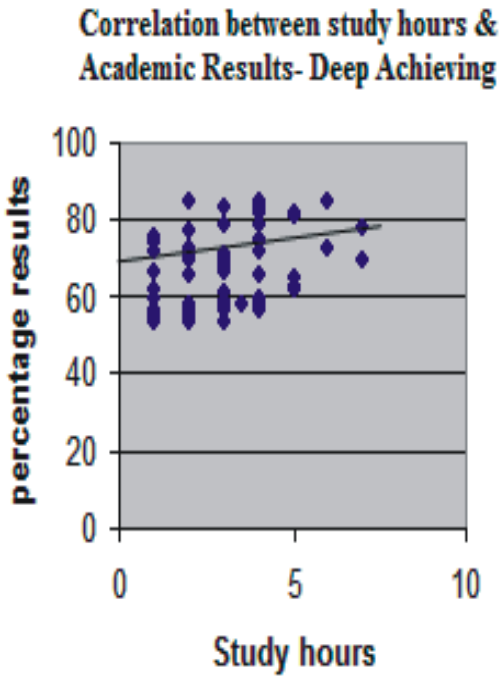
Table 1: Demographic data of Gender

Program	Male	Female	Total
BPT	14	66	100
MPT	4	13	17

Program	SA	DA	DAA	Total
BPT 1st Yr	2 (13%)	1 (6%)	12 (80%)	15
BPT 2nd Yr	6 (24%)	3 (12%)	16 (64%)	25
BPT 3rd Yr	6 (25%)	11 (46%)	7 (29%)	24
BPT 4th Yr	8 (22%)	5 (14%)	22 (61%)	36
MPT 1st Yr	1 (9 %)	2 (18%)	8 (72 %)	11
MPT 2nd Yr	0 (0%)	2 (33%)	4 (67%)	6
Total %	23 (19%)	24 (20%)	69 (59%)	117

Table 2. Demographic data of Study approaches

Note: SA- Superficial Approach, DA- Deep Approach,DAA- Deep Achieving Approach



Graph 1. Correlation between study hours and academic results- Deep Achieving

Graph 2. Correlation between study hours and academic results- Deep Approach

Graph 3. Correlation between study hours and academic results- Superficial Approach

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Trunk performance correlates with functional outcome in stroke patients – a cross sectional study

***Vanita D'souza, *Sydney Roshan Rebello, **Narasimman S.**

* Lecturer, Department of Physiotherapy, Father Muller Medical College, **Associate Professor Department of Physiotherapy, Father Muller Medical College, Mangalore-575 002

Abstract

Background: Rehabilitation of the stroke subjects demands much from the therapist, since it impairs not only limbs but also trunk. A good trunk control may enhance the functional independence. Objective:-To assess the trunk performance in subjects with stroke using TCT (Trunk Control Test) and PASS (Postural Assessment Scale for Stroke patients) and correlating it with their functional performance using FIM (Functional Independence Measure). Design:-Cross sectional study Setting:-Father Muller Medical College Hospital Subjects:-26 subjects clinically diagnosed with unihemispheric stroke Main Measures:-Trunk performance measured with TCT and PASS and functional performance measured with FIM. Results:-Mean age of the patients was 62.9 years of which 9 were females and 17 males .16 of them were in the 2nd stage of recovery of Chedoke , 9 and 14 were in the 3rd and 4th stage of recovery respectively. TCT had a significant correlation with FIM (r=0.5) and PASS had a high correlation of (r=0.81) with FIM.TCT and PASS also exhibited a moderate correlation of r=0.42. Conclusion:-Trunk performance is correlated with the functional outcome of stroke patients which is significant both clinically and statistically.

Keywords:-Trunk performance, trunk control, functional outcome, stroke.

Introduction

CVA (Cerebrovascular accident) may be defined as the sudden onset of neurological signs and symptoms resulting from disturbance of blood supply to the brain[1] .The individual affected with CVA may exhibit deficits in fundamental motor skills like bed mobility, sit to stand transitions, ability to maintain balance in sitting or standing or standing posture which are indispensable or achieving autonomy in ADL(activity of daily living).

These daily activities require maximal and efficient trunk control. Studies regarding upper and lower limb are innumerable but the trunk which is the central key point of the body is an area of neglect [2]. Trunk provides a proximal stability for required distal limb movements which are related to functional activity[3]. Thus the trunk is responsible for isolated movements in the limbs which make trunk performance a very important predictor for ADL after stroke.

The performance of the trunk and ADL has been evaluated in many ways. Outcome measures being one of the most sensitive tools which identify accurate changes in patients performance inability them to identify the prognostic status of an individual with a disability[4].TCT and PASS are commonly used for trunk recovery in which TCT captures the basic motor skills that predict recovery of complex trunk control. Along with these complex skills, postural performance is used to assess the ability to maintain and ensure equilibrium in changing positions. Both these scales showed high internal consistency and high inter rater reliability[5,6].

Functional status is measured using FIM which is a widely accepted measure in stroke rehabilitation research and estimates the recovery of functional milestones post stroke and showed a high internal consistency[7]. Thus trunk control in rehabilitation forms a pre-requisite for balance, transfers, gait and is related to an independent functional living. Various studies regarding the correlation between trunk performance and functional outcomes have been done either with

Reprints Requests: Vanita D'souza
Lecturer, Department of Physiotherapy
Father Muller Medical College
Mangalore- 575 002, Karnataka
Email: vanitajoan@yahoo.co.in

Received on 18.8.09, accepted on 16.9.09

TCT or PASS with FIM on an average of 6 months.

This study focused at measuring trunk performance using TCT which evaluates the trunk at the disability level and PASS which measures the postural performance and correlating it with functional status using FIM highlighting the importance of trunk control and shifting attention from the upper and lower extremity rehabilitation to focus on trunk control rehabilitation in the plan of care of an individual affected with stroke. The findings of this study enabled us to understand the importance of trunk control in functional recovery following stroke.

Materials and Methods

The study was done with 26 subjects which included patients admitted in FMMCH(Father Muller Medical College and Hospital)and community dwelling stroke between the months of January 2008 to May 2008. 26 subjects diagnosed clinically as unihemispheric stroke, between the age group of 50-70 years in the 2-4 Chedoke stages of motor recovery with a history of single stroke and a stable cognitive status were included in this study. Ethical clearance was obtained from the institutional review board . Subjects who were hemodynamically unstable, diabetics with visual defects or any musculoskeletal deformities were excluded. A written informed consent was obtained before the commencent of the study from the subjects. Demographic data including name, age, gender, side of weakness was documented. The cognitive status of the subject was evaluated using the Mini Mental Status Examination. The stage of recovery was assessed using postural stages of recovery. The trunk performance was measured using TCT and PASS. No verbal encouragement or feedback was provided throughout the procedure but the subjects were assured regarding the prevention of fall.

Figure 1. Turning from supine to affected side lateral

Firstly simple bed mobility tasks were evaluated using the Trunk Control Test. The test consists of four items which are assessed on a 3 point ordinal scale. This instrument assessed the gross motor functions. The subject was asked to roll to their weak side and the ability to complete this task was documented. The scoring was based on whether the subject was unable to do the task independently or non-muscular help in the form of pulling on the bed clothing, side rails of the bed. The other activities included rolling to the strong side, sitting up from lying position, balancing in sitting position with feet off the ground for 30 seconds. The total score ranges from 0 to 100.

Figure 2. Turning from supine to unaffected side lateral

Secondly the postural control was assessed using the Postural Assessment for Stroke Patients. This instrument was divided into two categories in which the first category was about the maintenance of posture followed by change in posture. In the category of maintenance of posture the subject was asked to sit on bed with feet touching the floor and their ability to sit with or without support was recorded. Standing with or without support and standing followed this on paretic and non-paretic limb. The second category included similar items of TCT i.e. from supine to weak and strong side alternatively and supine to sitting on the edge of the bed. These components were not rechecked as they were computed earlier. The additional items assessed were sitting to supine, sitting to stand transitions, standing and picking up a pencil from the floor. These were evaluated depending upon the ability

to perform the activity on their own, or with little or no help required by the subjects. According to the individual's capacity of performing the task a score of 0 which indicated that the activity could not be performed to a maximum score of 3 which indicates that the activity could be performed without help.

Figure 3: Standing unsupported

Figure 4: Supine to Sit

Figure 5. Sitting to standing transition

Lastly their independence in ADL was recorded using FIM. FIM evaluates the level of assistance an individual needs to grade the functional status from total assistance to complete independence. It measures what the individual does, not what the person could do under certain circumstances. The instrument contains 6 categories. The first section is about self-care activities. Here the subject was checked for the ability to eat, bath, dress the upper and lower body and toileting activities. The next section includes sphincter control in which they are questioned about their ability to control their bowel and bladder followed by a section of transfer, which comprises of whether they were able to transfer to bed, wheelchair and toilet. In the locomotion category their ability to walk or use the wheelchair was assessed and the last section, which contained the category of communication and social cognition, was evaluated. The entire assessment was taken on a single occasion.

Scales used

Trunk control test

The trunk control test evaluates motor performance of the trunk. The test consists of four items, which are assessed on a 3-point ordinal scale. The items are rolling from supine to the weak side, rolling from supine to strong side, sitting up from lying down and maintaining balance in the sitting position on the side of the bed. The total score ranges from minimum 0 to maximum 100 points. A higher score indicating a better performance.

Postural assessment scale for stroke patients

This involves being mounted on the edge of a 50 cm high examination table with feet touching the floor, standing with support and lastly standing on the nonparetic leg with no other constraints. Other tests are rolling from supine to affected side lateral, supine to non affected side lateral, supine to sitting up on the edge of the table, sitting on the edge of the table to supine, sitting to standing up, standing up to sitting down and standing and picking a pencil from the floor. Total score ranges from 0 which indicates activity cannot be performed to a maximum score of 3 which evaluates that the activity can be performed without help.

Functional independence measure

Functional Independence Measure uses levels of assistance an individual needs to grade functional status from total independence to total assistance .The instrument lists 6 self care activities like feeding, grooming, bathing, upper body dressing, lower body dressing and toileting. The functional mobility is tested through 3 items on transfer activities. Under locomotion, walking using a wheelchair and stairs is assessed. 2 and 3 items evaluate communication and social cognition respectively.

Data analysis

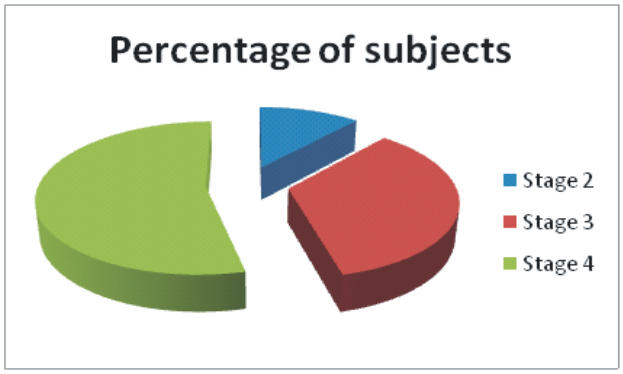
Collected data was expressed in terms of mean and standard deviation and has been analyzed using SPSS software. Karl Pearsons Correlation Coefficient was used to find the correlation between TCT, PASS and FIM.

Results

Side of Stroke	No: of subjects	Percentage
Left	10	38.5
Right	16	61.5
Total	26	100

Distribution of subjects according to side of stroke

The table shows that 16 subjects were right sided stroke and 10 subjects were left sided stroke among the 26 subjects included in the study.



Distribution of subjects according to Chedoke stage of recovery

Model	Un standardized Coefficients		Standardized Coefficients	T	p
	B	Std. Error	Beta		
1 (Constant)	30.064	21.365	0.597	1.407	0.172
TCT	0.834	0.229		3.642	0.001
Karl Pearson correlation coefficient r = 0.597, r square = 0.356					
a. DependantVariable: FIM					

Correlation between TCT and FIM

Model	Un standardized Coefficients		Standardized Coefficients	t	p
	B	Std. Error	Beta		
1 Constant)	40.653	9.942	0.813	4.089	0
PASS	2.576	0.377		6.833	0
Karl Pearson correlation coefficient r = 0.813, r square = 0.661					
a. Dependant Variable: FIM					

Correlation between PASS and FIM

The table shows that there is a high correlation of PASS with FIM where r=0.813. Trunk control has 66.1% affect on the functional outcome.

Discussion

This study showed that trunk impairment directly affects the functional improvement in stroke patients; a better trunk control had a better functional status. Since the trunk muscles have bilateral innervation, in unihemispheric stroke the impairment of the trunk may be less when compared to the limb weakness. Some of the authors pointed out that the weakness of trunk musculature could be attributed to the insufficient recruitment of high threshold motor units, disuse, immobilization , balance, stability and functional disability.[8] Several outcome measures have been validated to measure the trunk performance.

Clinical scales have the advantage of being applied to all patients. A study done by Franchignoni[7] stated that TCT had a significant correlation with FIM and it is also supported by the study done by Duarte and co-workers[9]. Their study includes acute stage of stroke and the trunk performance was measured on admission and discharge while as in our study it was a single

occasion measurement. Trunk performance of patients soon after stroke has found to be closely associated with long-term functional importance. Both measures of TCT and PASS are similar in context but PASS uses a 4 point ordinal scale whereas TCT uses a 3 Point ordinal scale. The PASS shows a less pronounced ceiling effect than TCT.[5, 10] PASS was well supported at early and later stages after stroke because the PASS contains required items which are easy and quick to use and is of practical value.

Compared to other scales, PASS was used because it includes fundamental activities to perform ADL tasks. The inter and intrarater reliability of PASS have been shown to be very high.[5,10] A good correlation is observed between PASS and FIM. FIM evaluates the physical and neuropsychological aspects of functional independence in stroke and has become the predominant tool for measuring multiple disabilities.

The predictors of post stroke function are age, previous stroke, bowel and bladder incontinence, visuospatial deficits, motor status, balance, severity of stroke, cognition, size and site of lesion .In this study the age, gender, side of lesion and stage of recovery has been taken into account & this study shows no correlation with the age and scales.FIM doesn't evaluate bed mobility in severely impaired stoke patients.

Unlike other studies this study did not find any correlation between the gender and the scales probably due to unequal distribution of males and females. Spinazzola and colleagues[11] demonstrated that patients with right hemisphere lesions suffer from postural deficits when compared to left hemisphere lesions. But in this study no correlation is found was found between the side of lesion and the scales. Patients with stroke duration of 2-5 years have scored maximum on TCT which is similar to the patients with a duration ranging from several days to several months. The possible reason for this could be the location and severity of lesion.

The positive correlation between the Trunk performance and FIM shown in this study includes importance of trunk muscle retraining in effective stroke rehabilitation. Further interventional studies are needed to find the efficacy of trunk muscle retraining in functional recovery following stroke.

Conclusion

This study showed that trunk control has a good correlation with functional independence. PASS is an effective tool measure trunk control when compared to TCT and it is also easy to administer.

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where they can exchange drafts and get feedback to each other," she says.

After you've gotten that fresh critique of your work, says Newcombe, listen to the pre-reviewer's advice. If the reviewer down the hall "didn't really understand page six and therefore got lost in page 13," she says, "don't just say they didn't read carefully--other people are going to make that same error."

For a final check, some editors suggest having the manuscript professionally copy-edited (see Further reading).

Send your manuscript to the right journal

Many rejections are the result of manuscript-journal mismatch--a discrepancy between the submitted paper and the journal's scope or mission. Newcombe advises authors to consider the "theoretical bent" of the papers that regularly appear in the journal before they submit a paper to it.

A major faux pas is submitting your manuscript simply to get it reviewed, says Newcombe. She's heard authors say, "This is a small experiment that I know would never get published in that journal, but I would like to get some feedback." Not a good idea, Newcombe says, because it wastes editors' and reviewers' time, and those who reject it from the journal may also be the ones who have to review the paper when it's submitted to a different journal. "It's a small community out there. Don't use up your reviewers," she says.

Beef up your cover letter

Many authors don't realize the usefulness of cover letters, Newcombe says. In addition to stating "here it is" and that the paper conforms to ethical standards, Newcombe says the letter can contain the author's rationale for choosing the editor's journal--especially if it's not immediately apparent.

The letter can also suggest reviewers for your manuscript, she says, especially in the case of a field that an editor isn't well-versed in. The flip side is also acceptable: Authors can suggest that certain people not review the manuscript for fear of potential bias. In both cases, authors can't expect the editor to follow the recommendations, says Newcombe. In fact, the editor may not follow any of them or may use all of them.

Don't panic

The overwhelming majority of initial journal manuscripts are rejected at first. "Remember, to get a lot of publications, you also will need to get lots of rejections," says Edward Diener, PhD, editor of APA's Journal of Personality and Social Psychology: Personality Processes and Individual Differences. Only a small proportion--5 to 10 percent--are accepted the first time they are submitted, and usually they are only accepted subject to revision. Since most papers are rejected from the start, says Newcombe, the key is whether the journal editors invite you to revise it.

Read the reviews carefully

In fact, anything aside from simply "reject," Neal-Barnett reminds, is a positive review. These include:

* Accept: "Which almost nobody gets," she says.

* Accept with revision: "Just make some minor changes."

* Revise and resubmit: "They're still interested in you!"

* Reject and resubmit: Though not as good as revise and resubmit, "they still want the paper!"

Some reviewers may recommend submitting your work to a different journal. "They're not saying the article is hopeless," says Neal-Barnett, "they're just saying that it may not be right for that journal."

If revision isn't invited following the initial rejection, many new authors may toss the manuscript and vow to never write again to or change programs. Newcombe's advice, though, is to read the reviews carefully and determine why that decision was made.

If the research needs more studies or if the methodology needs to be changed somehow, "if you have a sincere interest in the area, do these things," says Newcombe. You can resubmit it as a new paper, noting the differences in the cover letter.

Also keep in mind that "quite often, unfortunately, a journal will reject an article because it's novel or new for its time," says Newcombe. "If you feel that it is valid and good, then by all means, send it off to another journal."

Gary R. VandenBos, PhD, APA's publisher, adds, "once you have published, you take a feedback letter for what it is--a good-news sign telling what you need to do to transform it into an acceptance." It can take three or so journal-paper publishing experiences to get the hang of the process, he says.

Don't put off the revisions

If you are invited to revise, "Do it, do it fast and don't procrastinate," says Newcombe. Also, she warns that because reviewers can at times ask for too much, authors should take each suggestion into consideration, but decide themselves which to implement.

Be diplomatic

What if reviewers disagree? "There is a wrong and a right way" to address dissention among reviewers, says Newcombe. She quotes from Daryl Bem's Psychological Bulletin article:

Wrong: "I have left the section on the animal studies unchanged. If reviewers A and C can't even agree on what the animals have developed, I must be doing something right."

Right: "You will recall that reviewer A thought the animal studies should be described more fully whereas reviewer C thought they should be omitted. Other psychologists in my department agree with reviewer C that the animals cannot be a valid analogue to the human studies. So, I have dropped them from the text and have attached it as a footnote on page six."

Ultimately, it's good to keep in mind that the road to being published isn't a lonely one: "All authors get lots of rejections--including senior authors such as me," says Diener. "The challenge," he says, "is to persevere, and improve one's papers over time."

Source: http://www.apa.org/monitor/sep02/publish.html

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Book

Benjamin Lewin. *Genes VI.* New York; Oxford University Press, 1997

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