Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 10, Issue, 02, pp.66008-66012, February, 2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

EFFECTS OF HOME EXERCISE PROTOL ON QUALITY OF LIFE IN STROKE SURVIVERS

[1,*]Dr. Shweta Kulkarni, [2]Mayuresh S. Gore, [3]Dr. Ujwal l. Yeole and [4]Dr. Devika Bhide

[1]Assistant professor, Dept. of Physiotherapy, Tilak Maharashtra Vidyapeeth Pune
[2]Intern, Dept. of Physiotherapy, Tilak Maharashtra Vidyapeeth Pune
[3]Asso. Prof and Principal, Dept. of Physiotherapy, Tilak Maharashtra Vidyapeeth Pune
[4]Assistant professor, Dept. of Physiotherapy, Tilak Maharashtra Vidyapeeth Pune

ARTICLE INFO

Article History:
Received 11th November, 2017
Received in revised form
27th December, 2017
Accepted 06th January, 2018
Published online 28th February, 2018

Key words:
FIM,
FAM,
Home Exercise Protocol.

ABSTRACT

Background: Studies showed that supervised exercises at hospital level have more significant improvement in the QoL in stroke survivors than the non-supervised exercises at the community level. Hence the purpose of the study was to study the effect of community-based monitored home exercise programme in stroke survivors to improve the motor performance and the functional independence.

Aim and Objectives: To study the effect of home exercise protocol on quality of life in stroke survivors and find effect of home exercise protocol on quality of life in stroke survivors using the Functional Independence Measure (FIM) and Functional Assessment Measure (FAM).

Methodology: Total 70 Individuals were evaluated and taken for the home exercise protocol which were independent and was one year old or more suffering from stroke. Amongst these 30 individuals satisfying inclusion criteria were qualified for the project topic. Study Design: experimental, Study Setting: stroke society,Target population: stroke survivors, Sample population: stroke patients, Sampling method: random, Sample size: 30

Results: FIM results: 6Paired t test is done P value is< 0.0001, considered extremely significant =13.001 with 29 degrees of freedom. Pre: 49% post: 80% improvement: 31% FAM results: paired t test done P value is 0.2551, considered extremely significant =1.150 with 56 degrees of freedom. Pre: 48% post: 80% improvement 32%

Conclusion: The designed home exercise protocol works efficiently and helps the patient to move towards the better life and towards independency. There is intense positive effect of home exercise protocol on quality of life in stroke survivors.

Citation: Dr. Shweta Kulkarni, Mayuresh S. Gore, Dr.Ujwal l. Yeole and Dr. Devika Bhide, 2018. "Effects of home exercise protol on quality of life in stroke survivers", *International Journal of Current Research*, 10, (02), 66008-66012.

INTRODUCTION

Stroke is a preventable and treatable disease. It can present with the sudden onset of any neurological disturbance, including limb weakness or numbness, speech disturbance, visual loss or disturbance of balance. Over the last two decades, a growing body of evidence has overturned the traditional perception that stroke is simply a consequence of aging which inevitably results in death or severe disability. Evidence is accumulating for more effective primary and secondary prevention strategies, better recognition of people at highest risk and thus most in need of active intervention, interventions that are effective soon after the onset of symptoms, and an understanding of the processes of care that contribute to a better outcome.[1]

Corresponding author: **Dr. Shweta Kulkarni,**
Assistant professor, Dept. of Physiotherapy, Tilak Maharashtra Vidyapeeth Pune.

In addition, there is now good evidence to support interventions and care processes in stroke rehabilitation. In the UK, the National Sentinel Stroke Audits[2,3] have documented changes in secondary care provision over the last 10 years, with increasing numbers of patients being treated in stroke units, more evidence-based practice, and reductions in mortality and length of stay. In order for evidence from research studies to improve outcomes for patients, it needs to be put into practice. National guidelines provide clinicians, managers and service users with summaries of evidence and recommendations for clinical practice. Implementation of guidelines in practice, supported by regular audit, improves the processes of care and clinical outcome. [1] This guideline covers interventions in the acute stage of a stroke ('acute stroke') or transient ischaemic attack (TIA). Most of the evidence considered relates to interventions in the first 48 hours after onset of symptoms, although some interventions of up to 2 weeks are covered as well.

This guideline is a stand-alone document, but is designed to be read alongside the Intercollegiate Stroke Working Party guideline 'National clinical guideline for stroke'* which considers evidence for interventions from the acute stage into rehabilitation and life after stroke.[1] The Intercollegiate Stroke Working Party guideline is an update of the 2004 2nd edition and includes all the recommendations contained within this guideline. This acute stroke and TIA guideline is also designed to be read alongside the Department of Health's (DH) 'National stroke strategy' (NSS).[4] Where there are differences between the recommendations made within this acute stroke and TIA guideline and the NSS, the Guideline Development Group (GDG) members feel that their recommendations are derived from systematic methodology to identify all of the relevant literature.[1]

Stroke has a sudden and sometimes devastating impact on the patient and their family who need continuing information and support. Clinicians dealing with acute care need to be mindful of the rehabilitation and secondary care needs of patients with stroke to ensure a seamless transition across the different phases of care. All aspects of care must be patient-centred and where possible based on full discussion with the patient and/or carer, for example some aspects of the guideline may not be appropriate for patients who are dying or who have other severe comorbidities. Healthcare professionals should also follow a code of practice accompanying the Mental Capacity Act 2005.[1] Stroke is a major health problem in the UK. It accounted for over 56,000 deaths in England and Wales in 1999, which represent 11% of all deaths.[5] Most people survive a first stroke, but often have significant morbidity. Each year in England, approximately 110,000 people have a first or recurrent stroke and a further 20,000 people have a TIA. More than 900,000 people in England are living with the effects of stroke, with half of these being dependent on other people for help with everyday activities.[1]

In England, stroke is estimated to cost the economy around £7 billion per year. This comprises direct costs to the NHS of £2.8 billion, costs of informal care of £2.4 billion and costs because of lost productivity and disability of £1.8 billion.[1] Until recently, stroke was not perceived as a high priority within the NHS. However, following the publication of the National Audit Office report in 2005, a National Stroke Strategy was developed by the DH in 2007.[4] This outlines an ambition for the diagnosis, treatment and management of stroke, including all aspects of care from emergency response to life after stroke.[1] Stroke is defined by the World Health Organization[7] as 'a clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin.' A transient ischaemic attack (TIA) is defined as stroke symptoms and signs that resolve within 24 hours. There are limitations to these definitions. The symptoms of a TIA usually resolve within minutes or a few hours at most and anyone with continuing neurological signs when first assessed should be assumed to have had a stroke. 'Brain Attack' is sometimes used to describe any neurovascular event and may be a clearer and less ambiguous term to use.[1] The brain is arguably the most complex of all the organs in your body. These three pounds of tissue compose the major nerve center of the body, which coordinates all of our bodily functions, including behavior, thought and emotions. Because your brain is a very hard-working organ, it requires constant supplies of oxygen and nutrients from the blood to function effectively. The heart pumps blood throughout the cerebral arteries ("cerebral" means "related to the brain"), delivering blood to the brain. Any significant interruption to this supply of nutrients and oxygen will start killing brain cells. Damage to brain cells occurs almost immediately upon cessation or even significant restriction of blood flow to the brain. Minor damage to any part of the brain can have a serious adverse effect on the rest of the body. Significant damage to the brain can even result in death.[2] One relatively common cause of brain damage and death is referred to as a stroke. A stroke is similar to a heart attack, only in this case, blood flow to brain, rather than the heart, is blocked. The term "stroke" comes from the once popular idea that someone had received a "stroke of God's hand" and was therefore damaged. Strokes are also called cerebrovascular accidents (CVA's; "cerebrum" is Latin for brain, while "vascular" refers to the blood vessels) or "brain attacks" to emphasize the need to call 911 and get immediate medical attention when they occur.[2]

Arterial blood vessels feeding the brain can become blocked on a permanent or temporary basis. The term stroke is generally reserved for more permanent blockages that do not rapidly and spontaneously resolve themselves. These blockages result in permanent brain damage and leave lasting physical or mental deficits. Transient and temporary blockages are called Transient Ischemic Attacks (or TIAs for short). TIAs temporarily alter behavior and thinking (for less than 24 hours), but do not end up creating lasting brain damage. Because the damage is temporary, a TIA is sometimes referred to as a "mini" or "warning" stroke. Individuals who experience TIA's are at greater risk for having serious strokes in the future.[2] There are two major ways that strokes generally occur:Ischemic strokes occur when a blood clot (called a "thrombi") or a fatty plaque (composed of fat deposits, cholesterol, and waste products) blocks blood flow to an area of the brain, causing death of the associated neurons (brain cells). Fatty plaques often line the interior artery walls of people with a cardiovascular disease called arteriosclerosis ("hardening of the arteries"). These plaques narrow the arterial space, and serve as points around which blood begins to clot. Resulting thrombi start to block the artery, which reduces the amount of blood able to pass through, and therefore the amount of oxygen getting to the cells is reduced. The clots can also detach and float downstream (they are then referred to as emboli), block blood flow to brain areas, and cause subsequent brain damage. Approximately 88% of strokes are ischemic events.[2]

Hemorrhagic stroke, occurs when a cerebral (brain) artery ruptures and spills blood over the brain tissue. This spilled blood ends up pooling inside the skull, exerting pressure on and causing damage to delicate brain tissue. In addition, the ruptured vessels fail to do their typical job of feeding blood to specific areas of the brain. Between being starved for oxygen and nutrients, and being squeezed by the pressure of spilled blood, the brain ends up being severely injured or destroyed. Approximately 12% of strokes are hemorrhagic.[2] Approximately 700,000 Americans suffer a stroke each year. It is the third major cause of death in the United States each year after heart disease and cancer. In 2002, 162,672 individuals died of stroke in the United States.[2] Though strokes can be lethal, there are many people who survive them. However, these stroke survivors typically experience a range of limitations.

For example, people might lose the ability to comprehend language, to speak, to walk, or to control parts of their body. As a general rule, the right side of the brain controls the left side of the body and the left side of the brain controls the right side of the body. So, individuals who had a stroke affecting the right side of their brain will probably have some difficulty controlling some portion of the left side of their bodies, and vice versa.[2] Due to concept called "neuroplasticity", healthy areas of the brain are sometimes able to compensate for abilities lost to stroke. Therefore, many people experience partial recovery of pre-stroke abilities.[2] One of the major consequences after stroke is the deterioration in health-related quality of life (HRQOL). Three previous systematic reviews indicated that exercise has limited to no effect in improving HRQOL in stroke survivors. The objective of this meta-analysis was to update the evidence on exercise and HRQOL in stroke survivors with additional new information on randomized controlled trials.[5]

The results provide moderate support for the use of exercise to improve HRQOL in stroke survivors. However, the challenge for researchers is identifying effective strategies for sustaining these effects postintervention.[5] Stroke survivors report a poorer health-related quality of life (HRQOL) compared with the general population. Although HRQOL is a multidimensional concept, it is usually measured by physical or mental attributes associated with overall health status. For stroke survivors, the physical attributes of HRQOL include the interference they perceive in performing physical activities such as the ability to walk 1 block or by responses to pain levels associated with performing activities (eg, work outside the home and housework), and mental attributes are often measured by the perception of subjective feelings of interference in participating in social activities.[5]

Exercise may offset some of the decline in HRQOL in stroke survivors by (1) reducing secondary conditions such depression and pain; and/or (2) improving overall physical fitness, which leads to higher levels of physical function (eg, greater self-efficacy in performing activities of daily living). The dozen or so systematic reviews that have been published on the effects of exercise in stroke survivors have focused almost entirely on physiological changes such as walking speed and duration, cardiorespiratory fitness, and muscle strength.[5] There have only been 3 systematic reviews on the effects of exercise on changes associated with HRQOL in stroke survivors. All of these reviews concluded that the evidence before 2007 for using exercise to improve HRQOL in stroke survivors is limited or absent. However, since 2007, several investigators have examined the effects of exercise on HRQOL in stroke survivors. Given the importance of HRQOL as a primary outcome of rehabilitation and exercise training programs for stroke survivors, the purpose of this meta-analysis was to examine the effects of various doses and types of exercise on HRQOL in stroke survivors that would support or refute the findings from the 3 previous systematic reviews.[5] Annually, 700 000 people in the United States suffer a stroke, or ≈1 person every 45 seconds, and nearly one third of these strokes are recurrent. More than half of men and women under the age of 65 years who have a stroke die within 8 years. Although the stroke death rate fell 12% from 1990 to 2000, the actual number of stroke deaths increased by 9.9%. This represents a leveling off of prior declines. Moreover, the incidence of stroke is likely to continue to escalate because of an expanding population of elderly Americans; a growing epidemic of diabetes, obesity, and physical inactivity among the general population; and a greater prevalence of heart failure patients. When considered independently from other cardiovascular diseases, stroke continues to be the third leading cause of death in the United States.[6] Improved short-term survival after a stroke has resulted in a population of an estimated 4 700 000 stroke survivors in the United States. The majority of recurrent events in stroke survivors are recurrent strokes, at least for the first several years. Moreover, individuals presenting with stroke frequently have significant atherosclerotic lesions throughout their vascular system and are at heightened risk for, or have, associated comorbid cardiovascular disease. Accordingly, recurrent stroke and cardiac disease are the leading causes of mortality in stroke survivors.[6] Several important factors underscore the potential value of exercise training and physical activity in stroke survivors. Previous studies have demonstrated the trainability of stroke survivors and documented beneficial physiological, psychological, sensorimotor, strength, endurance, and functional effects of various types of exercise. Moreover, data from studies involving stroke and able-bodied subjects have documented the beneficial impact of regular physical activity on multiple cardiovascular disease risk factors and provided evidence that such benefits are likely to translate into a reduced risk for mortality from stroke and cardiac events. Although they require additional validation by randomized clinical trials and other appropriately designed studies, these observations make recommendations for stroke survivors to participate in regular physical activity highly compelling at the present time.[6]

Stroke or brain attack is the sudden loss of neurological function caused by an interruption of the blood flow to the brain and it is the second leading cause of death in the world and the first cause of functional incapacity for Activities of Daily Living (ADL).It can affect the survivor physically, emotionally and cognitively, ultimately resulting in behavioral changes and depression which leads to disability and functional dependence for ADL which reduces community participation and hence the Quality of Life (QoL).[7] Many stroke survivors have minimal to moderate neurological deficits but are physically deconditioned and have a high prevalence of cardiovascular problems; all of these are potentially modifiable with exercise. The purposes of this randomized, controlled pilot study were (1) to develop a home-based balance, strength, and endurance program; (2) to evaluate the ability to recruit and retain stroke subjects; and (3) to assess the effects of the interventions used.[8]

The ability of therapeutic exercise after stroke to improve daily functioning and quality of life (QOL) remains controversial. We examined treatment effects on these outcomes in a randomized controlled trial (RCT) of exercise in subacute stroke survivors.[9] Stroke is one of the major causes of morbidity and mortality worldwide. Spasticity is one of the positive feature of stroke. Hence, this study aimed at evaluation of effectiveness of propriocetive neuromuscular facilitation (PNF) over conventional physiotherapy on spasticity in hemiplegia. Randomised controlled trial was done on 30 stroke patients with minimum Grade 1 spasticity. The subjects were randomly allotted for intervention period of 4 weeks into two groups with those receiving PNF technique and conventional physiotherapy. The spasticity and functional independency was evaluated using Ashworth Scale and Barthel index respectively results obtained were compared.[10]

The CIMT versus Mirror therapy has proven effective in increasing functional use of affected hand in patients with subacute and chronic stroke To evaluate the effectiveness of the constraint induced movement therapy (CIMT) and combined mirror therapy for patient's rehabilitation of the patients with subacute and chronic stroke patients.[11]

Aim and objectives

Aims

To study the effect of home exercise protocol on quality of life in stroke survivors

Objectives

To find effect of home exercise protocol on quality of life in stroke survivors using the Functional Independence Measure (FIM) and Functional Assessment Measure (FAM)

METHODS AND METHODOLOGY

- Study Design: experimental
- Study Setting: stroke society
- Target population: stroke survivors
- Sample population: stroke patients
- Sampling method: random
- Sample size: 30
- Inclusion criteria: stroke diagnosed patients (more then 1 year)
- Exclusion criteria: umn lesions other then stroke
- Outcome measures: FIM AND FAM SCALE

Procedure

Proper consent and information regarding exercise was given

- The patent have assessed by the therapist before and after 3 weeks and also will note the improvement by the FIM and FAM scale.
- In all this process the patient was carefully monitor by the therapist daily in order to check that the patient is doing the recommended exercise daily or not.
- As the stroke patients are considered they are given with one home exercise that should be done by them selfies independently.

Home exercise protocol

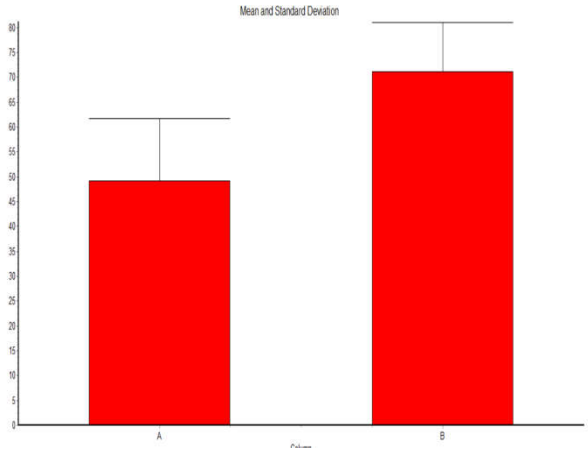
Areas of protocol include

- Muscle strength and control
- Spasticity and pain management
- Static and dynamic balance
- Coordination of movements
- Regaining functional ability such as getting in and out of bed, reach and grasp different objects, etc.
- Walking with correct pattern and speed

RESULTS

Pre: 49%	Post:80%	Improvement: 31%

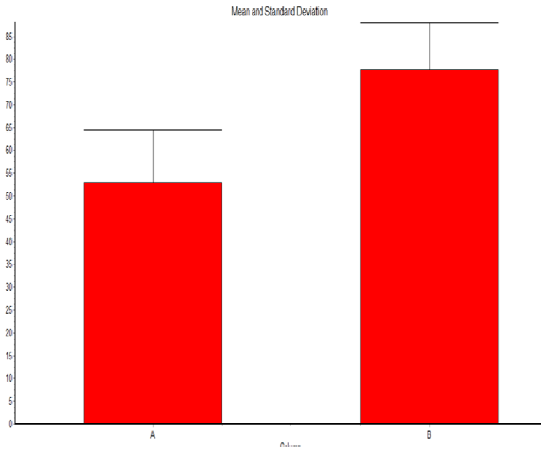
FIM results:



Paired t test is done
P value is < 0.0001, considered extremely significant t=13.001 with 29 degree of freedom.

FAM results

Pre:48%	Post: 80%	Improvement: 32%



paired t test done
P value is 0.2551, considered significant.
t=1.150 with 56 degree of freedom

DISCUSSION

One of the major consequences after stroke is the deterioration in health-related quality of life (HRQOL). Three previous systematic reviews indicated that exercise has limited to no effect in improving HRQOL in stroke survivors. The objective of this meta-analysis was to update the evidence on exercise and HRQOL in stroke survivors with additional new information on randomized controlled trials that have been published since these 3 previous reviews. The results provide moderate support for the use of exercise to improve HRQOL in stroke survivors. However, the challenge for researchers is identifying effective strategies for sustaining these effects postintervention. Exercise helped the patients to improve the quality of life as well as the planned protocol proved that it helps patient work more independently and because of the daily use of the planned exercise there was a massive improvement seen in the areas of A total of 1101 citation was identified and 9 studies met all criteria for a total sample of 426 stroke survivors. Eight studies were rated as good quality (ie, Physiotherapy Evidence Database scale ≥5). This meta-analysis provided evidence that exercise can have a small to medium effect on HRQOL outcomes (standardized mean difference,

0.32, **P**<0.01) at postintervention but not at follow-up after exercise was terminated (standardized mean difference, 0.17, **P**=0.12). No adverse events related to exercise were reported. [5] The results provide moderate support for the use of exercise to improve HRQOL in stroke survivors. However, the challenge for researchers is identifying effective strategies for sustaining these effects postintervention. [5] Studies were included if they met the following criteria: (1) recruited only stroke survivors ≥19 years of age; (2) no other disability groups were included in the study; (3) exercise was the primary intervention exposure; (4) HRQOL was a targeted outcome; (5) randomized controlled trial; (6) published in English; and (7) published in a peer-reviewed journal. HRQOL was defined as ≥1 physical and/or mental attributes associated with overall health status. Common examples of instruments that include HRQOL measures are the Short Form-36 and Stroke Impact Scale.[4] Exclusion criteria included: (1) therapy/rehabilitation interventions (eg, body weight supported treadmill training); (2) nonexercise treatment approaches (eg, psychotherapy); (3) no adequate data on effect size estimation; and (4) qualitative or case study. [5]

Activity intolerance is common among stroke survivors, especially in the elderly. Ambulatory persons with a history of stroke may be able to perform at ≈50% of peak oxygen consumption and 70% of the peak power output that can be achieved by age- and gender-matched individuals without a history of stroke. Such intolerance is likely due to several factors, including bed-rest–induced deconditioning, concomitant left ventricular dysfunction, the associated severity of neurological involvement (eg, flaccidity or developing spasticity of the lower extremity and/or impairment of the sensory function of the involved side, impaired trunk balance, spasticity or weakness of the afflicted upper or lower extremity, receptive aphasia, and mental confusion), and the increased aerobic requirements of walkingMuscle strength and control, Spasticity and pain management, Static and dynamic balance, Coordination of movements. Regaining functional ability such as getting in and out of bed, reach and grasp different objects, etc.Walking with correct pattern and speedThe exercise protocol was designed in such a way that it is focused on the most of the area's that will help the patient move towards the improvement in quality of life. And it showed the difference of 31% in FIM scalePaired t test is doneP value is < 0.0001, considered extremely significant t=13.001 with 29 degree of freedom. And showed 32% of over all progress in FAM scaleP value is < 0.0001, considered extremely significant t=14.001 with 30 degree of freedom. It is essential and mandatory to give such kind of exercise protocol to the patients to improve the quality of life.

Conclusion

- The designed home exercise protocol works efficiently and helps the patient to move towards the better life and towards independency.
- There is intense positive effect of home exercise protocol on quality of life in stroke survivors.

REFERANCES

1. London: Royal College of Physicians (UK), 2008. Stroke: National Clinical Guideline for Diagnosis and Initial Management of Acute Stroke and Transient Ischaemic Attack (TIA).; London
2. Benjamin McDonald, MD Feb 21, 2008. Introduction to Strokes
3. Ajay Upadhyay, Functional Independence Measure (FIM)
4. Dr. Lynne Turner Stokes Functional Assessment Measure (FAM)
5. Department of Disability and Human Development, University of Illinois at Chicago, 2011 Mar, Effects of exercise on quality of life in stroke survivors: a meta-analysis
6. Neil F. Gordon, Meg Gulanick, Fernando Costa, Gerald Fletcher, Barry A. Franklin, Elliot J. Roth, Tim Shephard, 2004,Physical Activity and Exercise Recommendations for Stroke Survivors.
7. Bhalerao Sharda, Varadharajulu G17 October 2016, Effect of Monitored Home Exercise Program on Quality of Life in Stroke Survivors.
8. Pamela Duncan, Lorie Richards, Dennis Wallace, Joni Stoker-Yates, Patricia Pohl, Carl Luchies, Abna Ogle, Stephanie Studenski October 1, 1998,A Randomized, Controlled Pilot Study of a Home-Based Exercise Program for Individuals with Mild and Moderate Stroke.
9. Stephanie Studenski, Pamela W. Duncan, Subashan Perera, Dean Reker, Sue Min Lai, Lorie RichardsJuly 27, 2005Daily Functioning and Quality of Life in a Randomized Controlled Trial of Therapeutic Exercise for Subacute Stroke Survivors.
10. Ujwal Lakshman Yeole, Sakshi Pritam Arora, Gaurai Mangesh Gharote, Rasika Balasaheb Panse, Pournima Ajinkya Pawar, Shweta Anil Kulkarni.1 Jan 2017 Effectiveness of Proprioceptive Neuromuscular Facilitation on Spasticity in Hemiplegia: Randomised Controlled Trial.
11. Pournima Pawar, Vijaykumar Biradar, Ujwal Yeole, Gaurai Gharote, Rasika Panse, Shweta Kulkarni. 28 Dec 2016 Compare the effect of cimtversus mirror therapy on hand function in subacute and chronic stroke.
12. Ujwal Lakshman Yeole, Sakshi Pritam Arora, Gaurai Mangesh Gharote, Rasika Balasaheb Panse, Pournima Ajinkya Pawar, Shweta Anil Kulkarni.1 Jan 2017 Effectiveness of Proprioceptive Neuromuscular Facilitation on Spasticity in Hemiplegia: Randomised Controlled Trial.
13. Pournima Pawar, Vijaykumar Biradar, Ujwal Yeole, Gaurai Gharote, Rasika Panse, Shweta Kulkarni. 28 Dec 2016 Compare the effect to fcimt versus mirror therapyonh and function in subacute and chronic stroke.

****