

## **Rehabilitation – Perspective of Spinal Injured Achiever.**

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LIFE, from birth to death is pretty much an adventure itself. When, yet other adventures in life, meant to be pleasurable experiences, take you for a toss, is the time you come head on with ‘life’.

I am Miss. Ketna Mehta, and I met with a paragliding accident on 12th February 1995 leading to a T12 burst fracture. That’s when I came to know that god wills differently for me, because my life lay totally changed from a completely independent, working professional to being dependent on my near and dear ones even for my basic chores.

Little did I know that I would be able to walk again with the help of a walker and come to lead a life that I can call independent. It only became possible due to the help and support of my family, medical team and consistent efforts of my physiotherapist Dr. Jacob.

It was like being reborn again, re-learning how to perform every single activity of daily living in a new way, to adjust to my new self. But yes, I can surely say, as toddlers our parents rejoiced every new step we took towards growth when we had no clue as to why we were being hugged and kissed for standing up or walking those baby steps. Looking at the brighter side of my disability I got to rejoice and celebrate every new step I took towards independence.

Spinal Injury (SI) is an aspersion to the spinal cord resulting in a change, either temporary or permanent, in its normal motor, sensory, or autonomic function. People affiliated with Spinal Injury usually have permanent and often devastating neurologic deficits and disability.

Spinal Injury is a high cost disability leading to drastic changes in an individual's life. Due to the many changes in the life of a person with spinal injury emotional and psychological support becomes an essential factor. Also, the financial impact of Spinal Injury is extremely high as the disability leads to lengthy hospitalization, medical complications, extensive follow up care and recurrent hospitalizations.

**Rehabilitation** is a reiterative, active, educational, problem solving process focused on a person's behaviour (disability), with the following components:

- Assessment – Persons Problem
- Goal setting
- Intervention – Treatment and Support
- Evaluation – to check the effects of intervention.

**The rehabilitation process aims to:**

- Maximize the participation of the person in his or her social setting
- Minimize the pain and distress experienced by the person
- Minimize the distress of and stress on the person's families and careers.



A rehabilitation service comprises a multidisciplinary team of people who

- Work together towards common goals for each person
- Involve and educate the person and family
- Have relevant knowledge and skills
- Can resolve most of the common problems of their persons.

This definition emphasises the importance of the team skilled in achieving the professionally perceived clinical outcome for the disabled individual.

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On 12th Feb 1995 at 12 a.m, on the outskirts of Mumbai, I was in a paragliding camp and this was my last flight. I trekked up the 40 feet hill and took off. Suddenly the wind turned and I swerved to my right without control crashlanding on the rocky ground with huge impact. T12 incomplete para paresis, burst fracture, the verdict. I assimilate important pointers which were favourable in my journey of Rehabilitation:

1. I was carried in the big tent cloth supine with four people holding the cloth on either side.
2. I was laid out straight on my back on rear seat of the ambassador car from the site of injury upto the town. (How we are handled at the time of accident is very important. I was fortunate!)
3. I was taken to Dr. Riten Pradhan an astute and knowledgeable orthopaedic surgeon whose hospital was there at Virar. He assessed my situation and immediately concluded it was Spinal Injury. His quick diagnosis was very important. He examined me, immediately look my brother's and sister's phone no's to inform them to come to Dadar Station to take me to a full service hospital in Mumbai.
4. Dr. Pradhan shifted me on a stretcher and took the decision to take me by train, not the rough road with jerks and bumps. He administered methylprednisole which if given within 6 hours of trauma aids our recovery, medically proven. Also

he accompanied me through the journey so psychologically I felt reassured about a qualified doctor besides me taking care.

5. At Hinduja hospital once in casualty Dr. Pradhan enquired about the various doctors present and coincidentally Dr. S. Y. Bhojraj ace spine surgeon was in his chambers preparing for a spine conference beginning the next day. Dr. Pradhan insisted that he be paged to evaluate me. Promptly, Dr. Bhojraj arrived and conducted a through examination. He decided to get my MRI and x-ray taken immediately to conduct surgery the same night on a Sunday. To have the best doctors both at the site and hospital according to me was a critical aspect of my rehab journey.

6. My family members were with me right from Dadar Station and this was a big positive. My elder sister Dr. Nina and Brother in law Himanshu Doshi were both doctors and their care, guidance throughout has made me independent to rehabilitate fully. My younger brother Dhaval has been a great source of energy and strength providing every resource and support for my rehab. My sister in law Rupal with her nutritious meals and hygienic atmosphere ensured that I recovered quick and fast.

7. Dr. S. Sagade, my urologist and he gently informed me about my bladder situation and taught me to drink over 2 liters of water each day and keep a tab on the urine output. I had an indwelling catheter for 20 days in the hospital.

8. The nurses and the mavshis and the ward boys at the hospital were extremely

caring and knowledgeable. Whether changing bedsheets or washing my hair, giving me medicines etc they did it cheerfully and warmly. The atmosphere was good with no one turning up their noses regarding my physical non-functionality.

9. I was informed by Dr. Bhojraj that I was on a waterbed in the hospital and that I should turn every two hours on my sides to avoid bedsores. I calculated that why not try to change to a regular mattress here in the hospital itself and practice it before investing in a waterbed at home. So we did this and it worked- turning every two hours on a regular mattress.

10. Sharon Vakharia was my first physiotherapist and such a sweet friendly and knowledgeable person. She made me exercise regaling me with funny anecdotes and jokes. It was fun time everyday. She also told me about two other people with spinal injury in the ward and urged me to visit them once I was mobilized on a wheelchair. My urge to motivate and help others started right from the hospital. My sister Nina started me on homeopathic medicine immediately to aid my neurological recovery and keep me in a happy and jovial frame of mind. RMOs Dr. K. Kumar and Dr. Sashin Ahuja explained that my condition was incomplete, burst fracture at T12 which was stabilized with a steffie plate with 4 screws (surgically implanted). I heard the word paraplegia for the first time in my life !

11. Friends, relatives, colleagues, Rotarians and associates visited me during visiting hours everyday. Dr Meeta Pradhan from Virar spent an enjoyable 2 hours chatting my one month stay at the hospital. We had never met before – ladies special ! This kept me in good spirits throughout. I was allowed home food which

satisfied me. Hemubhai drew the entire spine diagram explaining the role and functions of each vertebrae. Awareness is the first step to understanding and working on the situation. He elaborated what were the changes in my body due to this injury. My movement, sensations, bladder and bowel were all not functioning as it was earlier. My sister Nina constantly motivated me and urged me to surprise my doctors by working hard..very hard.



12. My cousin Merabhabhi came to the hospital with my family to pick me up from the hospital back home. Once we reached our building we were stumped as to how to take me on wheelchair up the flight of steps on the first floor. We thought and thought and then my brother –in-law took a decision. He picked me up and carried me on his back holding my hands around his shoulders and my feet at his waist (I am no light weight!). We all entered the house laughing. Support and instant decisions by family members to dissipate any obstacles / issues in my journey has been my biggest asset. Youthful, enthusiastic, positive and can- do attitude has been the single most positive influence, I believe.

13. Milka Vivek, my sister's friend was my second physio. She came home every morning with her three year old daughter Janani. She did a complete muscle charting explaining the grade and power of all my muscles in my legs both left and right. She scientifically explained each and every exercise movement and repetitions and how it benefited in my rehab. She simultaneously worked on my

upper limbs to build my biceps, triceps and pectorals to carry my body weight. Within 1 ½ months my splints arrived and Milka put them on for me and made me stand for the first time. I felt I was floating in the air with no balance and that I would fall. But my family was around and urged me to try and stand. This was a **BIG MOMENT**; a turning point for future possibilities.



14. Dr. V. C Jacob (Sion hospital, HOD, Physiotherapy) was visited by Nina and Milka and after great persuasion he came home to see me. He saw me, spoke to me and suddenly threw a pillow at me. I caught it, and retaining my balance smilingly threw it back. Something clicked and despite his very hectic schedule he came every weekday for 2 years hence. He had the experience, knack and the innate ability to innovate modules of exercises such that it never became monotonous. He is my ‘GURU’. He taught me to crawl, to come down and



up from the bed, to stand, hop, walk, climb stairs , sit in the car, open my home door balancing on one hand – in short, manage all activities of daily living. I felt I was moving from kindergarten to primary to secondary level and was enjoying the growth.



15. Dr. Jacob taught me several tricks – climbing stairs by personally getting railings installed, he ordered good thigh high calipers with shoes which locked at the knees, then graduating to ankle high shoes and also gave me a goal to help others with SI. To have an ace senior



physiotherapist to guide, advice and correctly assess my condition was a very important aspect of my rehab. He also took me in his car to Paraplegic Foundation and told me to dedicate one day of the week for my other friends with spinal injury. I shared, counseled and learnt about their issues and worked out solutions.

## **Education and Counseling by a Physiotherapist :**

A person with spinal injury requires extensive physiotherapy to gain strength, lost muscle tone and to become largely functional again. During the treatment a physiotherapist plays a vital role in bringing about a positive approach towards the treatment of the person. A caring touch, constant reassurance and reaffirmation from the physiotherapist helps the person to develop a positive approach as well as to look at the brighter side of life. The person needs to be explained the nature of the treatment, need for compliance and the importance of the regularity of the exercise.



She/he is informed about the condition and the likely outcomes. A team approach including physiotherapist, occupational therapist, social worker and person with Spinal Injury herself/himself will help the person gain not only physical independence but economic independence and social acceptance as well. The relatives and person with Spinal Injury are as much a part of the team as the professionals and must be considered at all times, because eventually it is they and the person herself/himself who will share the responsibility for the success or otherwise of attempts to restore her/him for an independent life in the community. In the case of the most severely disabled person the relatives may be able to undertake nursing care at home after suitable instructions and with the necessary equipments.

16. My mind was active professionally too. I had my management consultancy and continued with my market research projects – I had a PC & workstation and would work using the phone, hold meetings at home. It's an important aspect of rehab to be active and do what we enjoy.

Person with Spinal Injury must be explained the importance of physiotherapy and mobility in their life for well being. Changes in calcium metabolism following SI lead to osteoporosis below the level of the lesion and development of renal calculi. Following SI there is net loss of bone mass because the rate of resorption is greater than the rate of new bone formation. As a result of this resorption there are large concentrations of calcium present in the urinary system (hypercalciuria), creating a predisposition to stone formation. Though exact mechanism causing bone mass changes following paralysis is not clearly understood, immobility and lack of stress placed on the skeletal system through dynamic weight bearing activities are well accepted as major contributing factors.

Also, a combination of factors places the person with Spinal Injury at a higher risk for developing joint contractures. Lack of active muscle function eliminates the normal reciprocal stretching of a muscle group and surrounding structures as the opposing muscle contracts. Spasticity leads to muscle shortening in a static position. Flaccidity may result in gravitational forces maintaining a relatively constant joint position. Faulty positioning, heterotopic ossification, edema and imbalances in muscle pull contribute to the specific direction and location of a contracture development.

17. In the evening children from our area would come and we would play together – laughing and smiling. Never a dull moment. Thus I had my day planned....physio 6 hours a day, 4 hours work and 2 hours with the children. No time to be idle, no time for self-pity. The first two years are highly crucial and we have to invest all our energy in mindful physiotherapy.

18. Sally, my nurse and Meera Mavshi were my angels who blended so well with our family and were honest, hygienic and homely. In the initial rehab years we need caregivers.



They went beyond the call of their duty to support me. Going out for photocopying, faxing, binding etc., cooking savouries for guests and making me comfortable. The



ecosystem around the spinal injury has to be compassionate, communicative and congenial. When we feel good about the situation around us, we are positive and this frame of mind helps with our recovery.

19. Social interaction not only at home but also through visits and outings started as soon as I could climb stairs on my own. Being an outdoors person, this gave me happiness. My family took me to parks, beaches, sea faces, movies, plays, weddings, temples etc. I loved it and each outing was approached with a sense of adventure. My Rotary friends especially Satish Kulkarni came every Thursday, picked me up, drove me in his car to the venue of our meeting, sometimes carrying me up a flight on the first floor. With the continued respect and love shown by

Rotarians spouses and children – I never felt embarrassed of my weight or the way I looked with my calipers, brace and walker. (I seem to have set a trend of walking with a walker in public places!)

20. I would make it a point to travel or go out with different people – relatives, friends, professionals etc. thus I was never dependent only on my brother to take me out. I explored different modes of transport even public transport – so I was not tied to only **our** car. I learnt to ask for help whenever these were steps and the people of Mumbai and India in general extended their support never expecting anything in return. It was their way of doing a good deed. I learnt to hold two people on either side of their shoulders and take a step at a time to climb up or down. Nothing was inaccessible. I explored all with a sense of curiosity and adventure. '*God Bless You*' became a part of my lexicon.

21. My sister and brother -in- law being doctors taught me safe CIC method. I slowly learnt to manage myself – they would insist I do everything myself – including washing and boiling my catheters, dispose the urine from the urine pot and bedpan too myself, even though it meant squatting on all fours to and fro our bathroom. Initially bowel cleaning was done by my Mavshi – my brother and sister insisted I learn and slowly I could manage both the bladder and bowel program myself. Dr. Jacob urged me to teach the female person with Spinal Injury the art of self catheterisation at Paraplegic Foundation, which I did proudly.

## **Urinary Tract Infection (UTI) and Bowel and Bladder Control.**

After SI during the stage of spinal shock, the urinary bladder is flaccid. All muscle tone and bladder reflexes are absent. Therefore during this period it is important to establish an effective system of drainage and prevention of urinary retention and infection.

Bladder training programs allow a person to be free of a catheter and to control bladder function.

Intermittent catheterization is used for reflex bladder. Also reflex emptying may be triggered by manual stimulation such as stroking, kneading or taping the suprapubic region or thigh and lower abdominal stroking, pinching or hair pulling. A timed voiding program is used for the non reflex bladder. This type of bladder can also be emptied by increasing intra abdominal pressure using a **Valsalva maneuver** or by manually compressing the lower abdomen using the **Crede maneuver**.

The neurogenic bowel conditions that develop after the spinal shock subsides are of two types: a Reflex Bowel and a Non Reflex Bowel.

The major goal of a bowel program for the person with SI is establishment of a regular pattern of evacuation. This is achieved through multiple interventions, including diet, fluid intake, stool softeners, suppositories, digital stimulation and manual evacuation.

22. Like I mentioned of me being an outdoor person I started venturing out for my work as well. Nina accompanied me to Chennai for a consulting conference and I interacted with the who's who of the management world including the famous thinker Edward De Bono. I've traveled by air, train, bus, metro, cable car etc. I believe we have to take the first step with courage, the world rallies around.

23. My brother Dhaval has taken me on holidays to Singapore, Malaysia, Thailand, China, Dubai and Bali besides travelling to Sri Lanka for a conference. I have lived independently at home for 20 days at a stretch managing home, work and self.

24. I travelled solo for the first time to Thailand in 2003 for WWD's conference for 7 days and managed all by myself. This was indeed a wonderful opportunity and experience offered by Javed Abidi of NCPEDP. Sports always charged me and have participated in wheelchair throw ball which has lifted my spirits. Recreation is very important, and have tried wheelchair tennis too. We cannot become too regimented by dos and don'ts. Unless we attempt, we cannot learn. Also besides the tried and tested methods while we explore new skills we may unknowingly benefit...by way of better balance, control, grip etc.

## 25. **Rehabilitation: Levels of Rehabilitation**



(Source: "Market Potential Study for a World Class Spinal Cord Injury Rehabilitation Centre in Mumbai" PhD thesis by Dr. Ketna Mehta – India, 2008.)

Nina Foundation is an NGO founded in 2001 to spread awareness about prevention & rehabilitation of people with Spinal Injury. We also conduct educational seminars at various physiotherapy colleges, sensitizing the budding Physiotherapists.

Rehabilitation plays a major role in the life of a person with spinal cord injury.

REHABILITATION: re-ha-bil-i-tate.

In Latin rehabilitare means to ‘make fit again’.

The process of restoration of skills by a person who has had an illness or injury so as to regain maximum self sufficiency and function in a normal or as near normal manner as possible.

The definition above is just a synec doche for the whole process of gaining normal or near normal self sufficiency.

It starts not just from the movements of the limbs, done in an attempt to gain mobility and avoid contractures and other related complications, but from the mobilization of the mind by constant motivation so as to prevent it from developing the worst ever contracture called depression. Having to give up independence to a totally dependent life all of a sudden can be largely frustrating and devastating. It definitely is a good growth medium for harmful parasitic thoughts of hopelessness, helplessness and worthlessness.

Rehabilitation always is specific, according to the kind of injury and the parts affected and therefore will differ from person to person. It was and always will be the mainstay of the treatment. But apart from the main treatment part what matters is the therapist’s attitude and approach towards the person with Spinal Injury and



his disability. We could for once keep the vital law of charges in physics 'like repels like' aside here, because a positive therapist equals to a positive and motivated person with Spinal Injury. The passion and will of the therapist to make him / her independent itself causes a lot of positive change in the person with Spinal Injury. A considerate touch and loving words of care, bear all that it takes to bring a change.

### **Suggestions to Physiotherapists :**

A physiotherapist must know the person with Spinal Injury's strengths and weaknesses as well his mental and emotional stability. He must accordingly plan a treatment program. Futile or false hopes should not be given to the person instead all the possibilities and outcomes should be discussed and explained to the person in a soft & caring manner.

The aims of **physiotherapy** treatment will **differ** in relation to the **level of the spinal injury**. Physiotherapy can help reach and maintain maximum physical potential and help in the management of other aspects of the condition.

The effects of a spinal injury are dependent on the type and level of the lesion. Effects are seen below the level of a lesion and can present as a reduction or complete:

- Loss of sensation
- Loss of voluntary movement
- Loss of proprioception (awareness of joint position in space)
- Loss of bladder and bowel function
- Loss of sexual function

Individuals also commonly experience:

- Reduced Ability To Breathe Deeply And Cough
- Pain
- Muscular Spasms

**T1-T12 Paraplegia:**

Have innervation and function of all upper extremity muscles, including those for hand function

**T1-T12 ADL and Mobility needs:**

They can achieve functional independence in self-care (including light housekeeping and meal preparation), in bladder and bowel skills, and, at the wheelchair level, in all mobility needs.

**The effects of physiotherapy can be:**

- Increased quality of life
- Increased independence
- Increased muscle strength
- Increased energy levels
- Reduced pain and muscle spasms
- Reduced stiffness
- Reduced risk of chest infections

## **Reminders for person with spinal injury and their attendants:**

### **Care in bed:**

1. See there are no creases in the bottom sheet.
2. Use a firm mattress on a firm support so that the mattress does not sag.
3. Turn regularly as instructed by the therapist.
4. Do not use hot water bottles.
5. Inspect the skin each night and morning. Use a hand mirror to see posterior parts. If any redness occurs, investigate and take necessary measures to prevent breakdown of the skin.
6. Inspect the skin of the legs when the orthoses are removed.
7. If sheets are wet these must be changed at once.

### **Care while dressing:**

1. Do not use safety pins.
2. Do not wear tight clothing, trousers stockings or shoes. Avoid holes in socks.
3. Keep finger and toe nails short and smooth.
4. Check temperature of bath or washing water with hand to avoid scalds.
5. Check inside shoes before putting them on to ensure there are no nails or other harmful objects inside. Inspect feet when shoes have been removed.
6. Be careful not to have sharp objects in trouser pockets.

### **Transfers:**

1. Always move the legs carefully, lift them and do not drag them along, place down carefully.
2. Always lift high enough to avoid dragging buttocks over hard surfaces.
3. See the brakes are on and wheelchair secure.
4. Do not sit on hard surfaces, use a cushion or rubber seat in the bath and lavatory.

### **Care when in the wheelchair:**

1. Lift every 15 minutes for 15 seconds.
2. High cervical lesions must be lifted every 30 minutes.
3. Do not sit too near a fire or radiator.
4. Tetraplegics should wear gloves when wheeling chair.
5. Avoid exposing the legs to the extremes of temperature, e.g. wrap up in a rug if outdoors in cold weather, don't go very close to heater or a hot engine of the car.
6. Do not expose insensitve skin to strong sunlight.
7. Do not rest hot plates or mugs on your legs. Tetraplegics should use insulated mugs.

### **Care in motorized transport:**

1. Transfer with care.
2. Use a cushion.
3. Do not use a car heater.
4. Wrap up legs if weather is cold.

Having a spinal injury is a life changing event for both the person and their loved ones. The aim of the entire team should be to make the treatment sessions effective and enjoyable. All you need to explain to the person with spinal injury is that they need to give it a try, work up ways and means, ask for help whenever required and not lose hope and calm; all they need to have in their mind is that they need to reach their goal. There is just a need to stimulate that urge for living and reignite the fire for setting goals and achieving them in a manner possible to them. A physiotherapist becomes a friend, confidante, story teller, advisor and life coach. The trust reposed on the physiotherapist is immense and with tremendous patience can resurrect the life of the person with Spinal Injury bit by bit by bit – always being positive & keeping hopes alive.

Salute to this amazing breed of professionals!

(Dr. Ketna L. Mehta is founder Trustee of a 10 year old NGO, Nina Foundation – Rehabilitation of people with Spinal Injury. They have received two awards NCPEDP Shell Helen Keller Award, NASEOH Award, featured in the Limca Book of World Records and empowered our 600 person with Spinal Cord Injury. She is a Management Educationist, Editor & Associate Dean, Research, Welingkar Institute of Management Development & Research, Mumbai.

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