



Tele Rehabilitation Procedures Using Mobile for Physiotherapy Services

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Abstract

Telerehabilitation is a part of the telehealth revolution, a concept which was first described in 1997 by the World Health Organization as “the use of electronic information and telecommunication technologies to support and promote long-distance clinical health care, patient and professional health-related education, public health and health administration. Rehabilitation is a major element of health sciences, and is the process of restoring an incapacitated individual to a normal life through training and therapy. Worldwide, 2.4 billion people may currently require rehabilitation. In 60 to 70% countries, existing rehabilitation services have been disrupted due to the corona virus disease 2019 (COVID-19) pandemic. Even after lockdowns and with vaccinations, some form of physical distancing is likely to be part of the new normal. Contemporaneously, there is an exponential growth of telehealth. This global overview will demonstrate that telerehabilitation is likely to be a distinct stand-alone sub specialty of tele health.

Keywords: Telerehabilitation

Introduction

Telerehabilitation in India

Of the 504 million active internet users in India, 70% access the internet daily mostly using mobile phones. Intriguingly, communication technology is growing faster in rural than in urban areas. In 2020, 500 million Indians were using smartphones and 77% were accessing broadband services using smartphones. Publications on telephysiotherapy from India emphasize that this is a clinical application of consultative, diagnostic, preventive, and therapeutic services via two-way interactive technology. Telephysiotherapy includes diagnosis, surveillance, care, guidance, support and counseling.

Restraints to growth and development of TR in India include: technology, literacy, education, inadequate power supply, network issues, and shortage of multimedia devices. Individuals may have difficulty using devices and software effectively or access may be difficult as multiple users could need to use the same device. Better bandwidth and video quality enhance assessment accuracy.

The details of setting up TR and the standardized procedures have not been adequately taken into consideration so far and also have not been analyzed in any study until now. Therefore, the objective of this study is to collate and map the evidence on standardized procedures and general instructions regarding the use of telerehabilitation.



Telerehabilitation

Telehealth is the delivery of health related services and information via electronic communication technology is the key aspect of this service delivery but telehealth is not confined to one particular type of technology [1,2]. While technology enables to clinical interaction to take place over any geographical distance. The choice of technology can determine how these interactions take place [3].

As a result of COVID-19 Pandemic there was a step change in the adoption of the tele health in Physiotherapy with sudden significant increase in its use. However Physiotherapists have been using tele health successfully for many years in various clinical settings this programme will focus on different aspects of tele health including platform selection and related practical issues such as ethics assessment and management [4,5].

General Instructions [6]

- Keep the mobile brightness to the maximum of better visibility
- Use earphone / headphone for better hearing, keep optimal based on your hearing
- Preferably select place with no disturbances (visual / sound)
- Ensure mobile is charged sufficiently (> 80%)
- Use the area with good internet connectivity.
- Ensure Good lighting - (look towards the window / tube light for the source of light, there should not be any light back of patient)
- Lighting outside house: (applicable for patients with poor network, less space), Make sure the sun is not at the backside of patient.

Type of TR: real time (if required make two different documents)

Patient using mobile

Neck and Upper Quarter

- Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)
- Optimal distance 150 -200cms,
- Height of camera: at the same level of chin (Right angles to the tip of the nose 100-120cms
- Orientation (portrait or landscape): Portrait
- Device stability: hand held/ stand/ Supported against firm surface like wall or book, and /or mobile holder
- Patient position [regard to light source and view (frontal or sagittal)]
- Sit facing to the light (Opposite to the camera, make sure that no light is there behind you)

- Patient clothing: Round neck with tight sleeves or sleeveless

Shoulder

Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)

- Optimal distance 200 -250cms,
- Height of camera: at the same level of sternum (chest) (Right angles) 90-120cms
- Orientation (portrait or landscape): landscape
- Device stability: stand/ Supported against firm surface like wall or book, and /or mobile holder
- Patient position [regard to light source and view (frontal or sagittal)]
- Sit facing to the light (Opposite to the camera, make sure that no light is there behind you), with both hands free to move
- Sagittal (from side) – camera positioned at same level, turn to right or left (eg,if your right shoulder is affected turn to left so that right shoulder is facing the camera)
- Frontal (front) - camera positioned at same level, turn facing towards camera
- Patient clothing: Round neck with tight sleeves or sleeveless
- Women: Round neck with tight sleeves or sleeveless / Saree (with pallu pulled up without restricting the shoulder movements)
- Men: Sleeveless inner vest / t shirt – tight fitting with round neck (sleeveless)

Elbow, Wrist and Hand

- Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)
- Distance of camera: 100- 120 cms.
- Height of camera: perpendicular to part or not important: in sitting at the same level of elbow joint (Right angles to the lateral / medial epicondyle) 80- 90 cms.
- Orientation (portrait or landscape) landscape
- Device stability: hand held/ stand/ Supported against firm surface like wall or book, and /or mobile holder
- Patient position [regard to light source and view (frontal or sagittal)]
- Sit facing to the light (Opposite to the camera, make sure that no light is there behind you)
- Patient clothing: Sleeveless T-shirts.

Lumbo Sacral Spine, Hip

- Distance of camera from part to be seen (optimum distance because the patient must be able to see the

screen as well)

- Optimal distance 280 to 340cms,
- Height of camera: at the same level of Greater trochanter or ASIS (Right angles) 80 to 110cms
- Orientation (portrait or landscape): Portrait
- Device stability: stand/ Supported against firm surface like wall or book, and /or mobile holder on a chair or table
- Patient position [regard to light source and view (frontal or sagittal)]
- Sagittal (from side) – camera positioned at same level, turn to right or left (eg.,if your right HIP joint is affected, then turn to left so that right HIP is facing the camera)
- Patient clothing: Tight shorts or tight leggings
- Women: tight elastic leggings or shorts
- Men: shorts or tight boxers or undergarment

Knee

- Type of TR: real time (if required make two different documents)
- Patient using mobile: If yes (mention the brand / company/ model)
- Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)
- Optimal distance 100 cms,
- Height of camera: perpendicular to part or not important: in sitting at the same level of knee joint (Right angles to the mid patella 50- 60 cms.
- In lying at the same level of knee joint (Right angles to lateral joint line of knee: 60 -80 cms.
- Orientation (portrait or landscape)
- portrait
- Device stability: hand held/ stand Supported against firm surface like stool or book, and /or mobile holder
- Patient position [regard to light source and view (frontal or sagittal)] high sitting
- Sit facing to the light (Opposite to the camera, make sure that no light is there behind you)
- Supine or prone lying facing to the light (Opposite to the camera, make sure that no light is there behind you)
- Patient clothing: men: half trousers with knee exposed.
- Women: tight fit pants/ Dress appropriate to expose the knee.

Ankle and Foot

- Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)
- Distance of camera: - 50 cms.
- Height of camera: perpendicular to part or not important
- Patient camera on the floor (5-10 cm). On the ground in

high sitting

- Orientation (portrait or landscape) landscape
- Device stability: supported against a firm surface book/ mobile holder.
- Patient position [regard to light source and view (frontal or sagittal)]
- Sit facing to the light (Opposite to the camera, make sure that no light is there behind you)
- Patient clothing: men: half trousers with ankle exposed. Women: tight fit pants/ Dress appropriate to exposing the ankle

Upper Body (Face, Neck, Chest and Abdomen)

- Type of TR: real time
- Patient using mobile: If yes (mention the brand / company/ model)
- Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)
- Optimal distance 175 -200 cms,
- Height of camera: at the same level of Xiphi sternum (Right angles to the Xiphisternum)75cm-100cms from table
- Orientation (portrait or landscape): Portrait
- Device stability: Stand / Supported against firm surface like wall or book, and /or mobile holder
- Patient position [regard to light source and view (frontal or sagittal)]
- Sit facing to the light (Opposite to the camera, make sure that no light is there behind you)
- Patient clothing: Round neck with vest if men, t-shirt without collar if women

Whole Person Static

- Area of visibility: The person should be visible from head to toe. In anterior, posterior and lateral view.
- Distance of camera from part to be seen (optimum distance because the patient must be able to see the screen as well)
- Distance of camera: 180-200 cms
- Height of camera: perpendicular to part or not important. Standing at the same level 120-140 cms
- Orientation (portrait or landscape) portrait
- Device stability: hand held/ stand Supported against firm surface like high table or stand
- Patient position [regard to light source and view (frontal or sagittal)] (Opposite to the camera, make sure that no light is there behind you)
- Stand facing to the light (Opposite to the camera, make sure that no light is there behind you)
- Patient clothing: Men: above knee trousers only women: Short trousers and sleeveless tops.

Whole Person Dynamic

- Area of visibility within which movement is possible (mark out). The person should be visible from head to toe. In anterior, posterior and lateral view during the movement.
- Distance of camera from area (optimum distance because the patient must be able to see the screen as well)
- Distance of camera: 180-200 cms
- Height of camera: perpendicular to area or not important Standing at the same level 120-140 cms
- Orientation (portrait or landscape) Portrait.
- Device stability: hand held/ stand Supported against firm surface like high table or stand
- Patient position [regard to light source and view (frontal or sagittal)] Opposite to the camera, make sure that no light is there behind you)
- Patient clothing: Men: above knee trousers only women: Short trousers and sleeveless tops

Conclusion

The new face of physiotherapy applications using tele-rehabilitation can facilitate patient participation by creating an interactive exercise environment that promotes self-efficacy and behaviour change through improved communication, goal setting and progress reporting means [7-9].

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