International Society for Virtual Rehabilitation

ISVR

NEWSLETTER

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Editorial

August 2020 Newsletter 18

This is a very special time in many respects. While many of us were confined to our homes, the need for rehabilitation not only continued to exist but became essential. Apparently, the time for telerehabilitation is here. Telerehabilitation has been around for over 10 years, still, it is rarely implemented as a routine treatment.

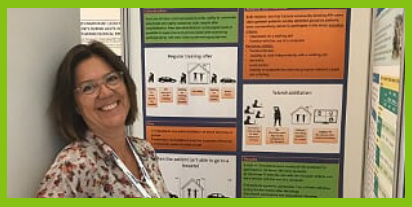
In this issue, we asked three researchers about their experiences with telerehabilitation. Bodil Jørgensen from Aarhus University Hospital in Denmark describes the challenges in providing telerehabilitation for frail elderly patients on page 2, Rocco Salvatore Calabrò from Sicily, Italy reports from a study on telerehabilitation with patients with severe acquired brain injury on page 4, and Dahlia Kairy from the University of Montreal, Canada reflects on telerehabilitation in the light of Covid-19 on page 6.

We are always looking for interesting contributions to the newsletter, and we would like to hear from your experiences, too. What are your experiences with telerehabilitation, Corona-related or not? Send us a few lines about the type of telerehabilitation, the target group and how it worked or, if you would like to share your news, upcoming events or an overview of your research, lab, clinic or company, please contact us at newsletter@isvr.org.

Have a nice summer!

Sergi Bermúdez i Badia, ISVR president

IN THIS ISSUE



UPCOMING EVENTS

11th World Congress for Neurorehabilitation
October 7–10, 2020
Digital Congress
https://www.wcnr-congress.org/

European Stroke Organisation and World Stroke Organization Conference 2020
Postponed to November 7–9, 2020
Virtual Conference
https://eso-wso-conference.org

Rehabilitation World Congress
Postponed to September 7-9, 2021
Aarhus, Denmark
https://www.riworldcongress2020.com/

13th International Conference on Disability, Virtual Reality & Associated Technologies
Postponed to September 8-10, 2021
Serpa, Portugal
http://icdvrat2020.ulusofona.pt/

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TELEREHABILITATION IN DENMARK

Aarhus University Hospital

Bodil Bæksted Jørgensen, MSc
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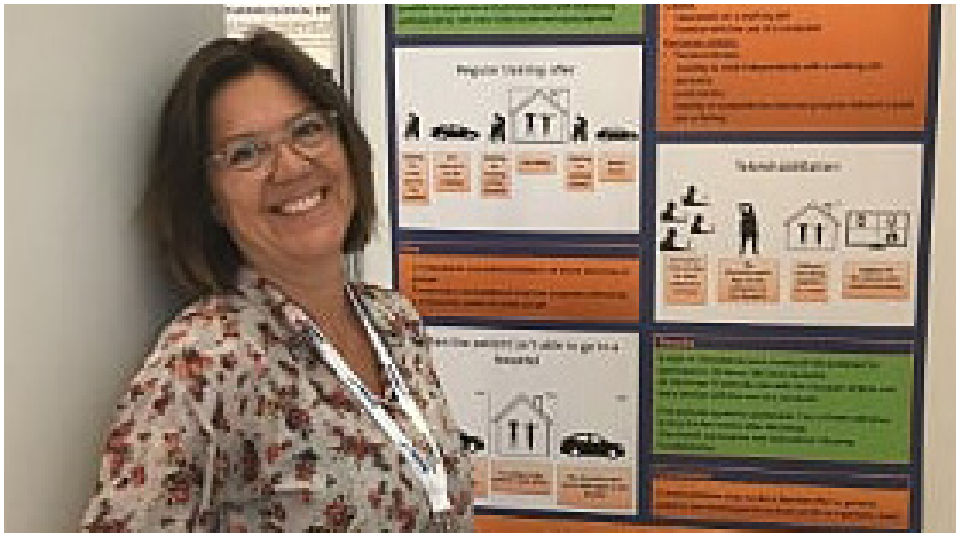
Bodil Bæksted Jørgensen does currently a PhD where she examines telerehabilitation for elderly patients. Iris Brunner interviewed her on June 4, 2020.



Bodil Jørgensen

Can you tell us a little bit about yourself?

I am a physiotherapist at Aarhus University Hospital, responsible for professional development, I have an MSc in Health Sciences and currently doing a PhD on telerahabilitation. I have more than 20 years' experience with geriatric patients, among others patients with COPD, cardiovascular diseases and patients after different types of surgery, e.g. hip replacements. I worked a lot with fall prevention and vertigo.

What made you interested in telerehabilitation (TR)?

I experienced that it required a lot of energy from the elderly patients to meet up for the training. Many needed help to get ready to leave the house, needed transport, and were supposed to wait at the rehab center. Therefore, they could be quite exhausted already before the training started. For many patients, a lot of preparation is needed to receive a relatively small amount of training when they have to travel.

What was your project about?

The first project was designed to deliver seamless continuation of training after discharge to home from a geriatric ward at the hospital. In the beginning, we intended to include the older elderly people from 75 years onwards and also people who had no experience with computers. We soon had to realize that it would not work that way. There were many people with cognitive impairments, which is a major obstacle to participation in TR in this age group. Furthermore, teaching people computer literacy from scratch turned out to be unrealistic. Even many of those who owned a computer felt very insecure in using it. For many of our patients, it was just too overwhelming to start with TR. They came home from hospital, possibly received home care for the first time in their lives. To familiarize themselves with TR was just too much to cope with in this situation. We screened more than 300 patients and ended up with five. That is why I redirected the project in a different direction, which became project B, and decided to deliver group TR group training at a later point in time, not immediately after discharge.

What type of rehabilitation did you offer and which platform did you use?

The goal of the training was to prevent falls and to enhance the functional capacity. We used a sample of exercises, which have been developed in New Zealand, The Otago fall prevention program exercises, delivered by Physiopedia (https://www.physio-pedia.com/Otago_Exercise_Programme). These are simple exercises suitable for a screen. They can be delivered synchronous and asynchronous, that means with and without the supervision of a therapist. All exercises can be done in standing or sitting position, which is important from a safety perspective. **We did not use any VR in this project, just online training like in a video conference. The platform we used is called KMD VIVA.** The training program lasted for 4 weeks twice a week. The following four weeks the participants were supposed to exercise on their own. Twice a week the physiotherapists would contact the patients via the computer to see if there were any problems regarding the exercise sessions. During the latter four weeks it was still possible to communicate with the other team members. In this period, the exercises would also consist of exercises from the Otago program

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displayed on the computer in form of video sessions. It was not technical possible to conduct the last four weeks as planned, instead we ended up by conducting supervised Telerehabilitation for 8 weeks.

How did the technology work with a group, where not everybody has a computer or computer experience?

As with the first project, there were some challenges. However, patients in this project were younger, mean age 77.6 years, range 74-85 and most of them to some degree familiar with using a computer. This made things much easier. We provided the equipment and we also bought mobile WLAN since the internet connection was not sufficient everywhere.

How many home visits were necessary, how much support needed? Were caretakers involved?

Most of our participants lived alone, therefore caretakers were not much involved. Three to four home visits were necessary before the online training started. We also had to evaluate the patients and therefore planned several home visits anyway.

How did your participants experience the TR home training?

It was a really positive experience for most of them, particularly the social aspect. The fact that they were able to be together in a group, though physically apart, was very motivating for them. Frequently, I opened the virtual meeting room a while before the training started. When I joined in people were already chatting with each other, like in a real waiting room. Also during the training sessions they appreciated the possibility to talk to each other.

A patient training at home

Can you give some examples of a successful training course with TR and one that didn't work at all?

There was an 85-year-old woman who had been at the hospital for a longer period of time due to reduced lung capacity. Before admission to hospital, she had experienced a substantial decrease of her functional capacity. She was diagnosed chronic obstructive pulmonary disease (COPD) and discharged with long-term oxygen. She lived in a rural community and it would have been difficult to travel to the next community health center for training. She was offered an IPad and the possibility to participate in TR. At first, she was very dismissive and asked if this was a new way of saving expenses for therapists. She consented to participate despite her concerns. Initially, the TR was provided on an individual basis, later on she changed to TR group training. She ended up being really enthusiastic about TR. Her function had improved substantially and she also liked the social contact. She expressed her surprise about the ease of establishing good contact with the therapist online. She would now prefer TR to other rehabilitation if she could choose.

Another case was an 80-year-old woman, who was recruited from the fall clinic, where she was treated for dizziness. Additionally, she suffered from an anxiety disorder and practically never left the house apart from visits to the hospital. She had also COPD, and therefore reduced functional capacity. She participated in a TR training group, which worked fine until she got acute impaired hearing. According to her wish, we try to conduct the TR training only by her looking on the screen to see what the exercises look like. After a few sessions, we had to give up because her hearing impairment was too disruptive for the other participants in the group. We continued with individual TR sessions where her reduced hearing could better accommodated.

In general, what would you say is needed to make telerehabilitation a success story? Which wishes do have towards technology, education etc.?

In our case, it was apparent that we had to choose the right patients at the right time. TR worked much better with the "younger" elderly and when it was initiated some time after discharge, not immediately. Of course, technology could still be easier, fewer clicks, simple design. A touchscreen is more intuitive than a keyboard. The social aspect seems to be quite important.

TELEREHABILITATION IN ITALY

IRCCS Centro Neurolesi Bonino Pulejo

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Dr. Rocco Calabrò is neurologist and researcher at the IRCCS Centro Neurolesi Bonino Pulejo.

Would you say a few words about your background, your work place?

I am a neurologist, with a PhD in Psychiatric Sciences, and researcher. I work in Messina, Sicily, at the IRCCS Centro Neurolesi Bonino Pulejo where patients with disorders such as stroke, TBI, Parkinson Disease, Multiple Sclerosis and other neurological conditions are rehabilitated. I'm the responsible of the Robotic Rehab Service, which includes the main devices for lower (Lokomat, Ekso, Geosystem) and upper limb (Armeo, Amadeo), as well as innovative tools for cognitive rehabilitation (BTs Nirvana, VRRS).

What generated your interest in telerehabilitation (TR)?

I have been working with TR for several years. There is a strong interest for TR in Italy and we have an active national network for TR. My interest in TR was elicited by the possibility to provide seamless rehabilitation after discharge, also for people living in remote areas.

You are the PI of ongoing project where TR is provided for people with severe acquired brain injury ABI. These are people with severe cognitive, motor and psychological impairments. What are the special challenges with TR for this patient group?

Since many of these patients are so severely impaired, they may have difficulties to initiate the TR training on their own. We are quite dependent on caregivers who can help with the set up. In general, I would say that training to use the system is crucial, not only for the patient, but also for caregivers and therapists. Everybody involved in TR has to be familiar with the TR system and to some extent convinced that this type of training is beneficial. In our ongoing study, we put a special emphasis on learning how to use the TR system. We start with TR when the patients are still at the hospital. They and their caregivers receive a thorough introduction and they can try by themselves in a separate room. We provide several sessions of TR at the hospital with a health professional who is able to assist just around the corner. By this means, we can solve most problems that can arise at home.

Could you briefly describe the study? What type of motor and what type of cognitive rehabilitation? Is VR included?

We want to include 80 patients, 40 with stroke and 40 with traumatic brain injury. They are randomized to either TR or standard rehabilitation provided by the municipality health service. The patients receive 4-5 sessions TR for 4 weeks. This includes both cognitive and motor rehabilitation according to individual needs. We assess disability, cognitive impairment, motor impairment, depression and quality of life. We expect TR to be as least as effective as standard rehabilitation.

Dr. Rocco Calabrò

Which system do you use for TR? Is it commercially available or custom-built or both?

We deliver the training by means of the Virtual Reality Rehabilitation System (VRRS) produced by the Italian company Khymeia (http://khymeia.com/en/products/vrrs/). Patients are equipped with tablets to do their exercises at home. These tablets are connected with a work hub, the "cockpit" where a therapist can supervise the exercises. All exercises can be adapted to the patients' current level.

How does it work with these severely impaired patients? Is there need for support from a caretaker, what are the technical prerequisites?

Yes, we usually need the help of a caretaker to help the patients with their exercises. We have experienced that it is easier to deliver the cognitive exercises, because these are really

TELEREHABILITATION IN ITALY

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touchscreen-based only. It can be a bit more complicated with motor exercises where the patients have to wear sensors to transfer their movements to the screen. Moreover, as most of the patients are not able to stand, balance and muscle reinforcement excercises can not be provided using TR.

TR can be delivered asynchronous and synchronous. It seems to be an advantage when a neuropsychologist or a physiotherapist is available and can help or correct the patient during the first sessions.

Regarding the caretakers, it is definitely an advantage if they have some computer experience. It makes things a lot easier. As I mentioned, we put a lot of effort in thorough training while patients are in the hospital. Therefore, not many home visits from health professionals are necessary. Most of our patients are not able to live alone. Therefore, some family member is usually around them anyway.

Figure 1 shows a patient affected by stroke, using the VRRS-Evo (the main workstation) with the supervision of a clinician and a telemedicine operator, before discharge.

In your view, what are the major advantages and drawbacks of TR?

TR has many advantages. We can reach patients in rural areas and we can care provide seamless care after discharge. Furthermore, we may be able to provide rehabilitation at a higher intensity, thereby preventing functional decline. The fact that more patients can be supervised by one therapist makes it also attractive from an economical point of view. On the background of the recent Corona pandemic, it has become obvious TR would be the only way to receive rehabilitation for many patients. However, there is still a long way to go until TR is really a part of standard rehabilitation. TR is still mainly research based and not routine care, also in Italy. That is why we could not continue the study during the Corona virus pandemic. Still, the potential for similar situations is clear. There is also potential for improvement with regard to user-friendliness, simpler systems, fewer clicks…. Of course, there will always be areas of rehabilitation that are difficult to provide online. Gait and balance training for example, where there are safety concerns, or training that requires special equipment, e.g. robot-assisted gait training. Nevertheless, the is a huge potential in TR, which currently has not been realized.

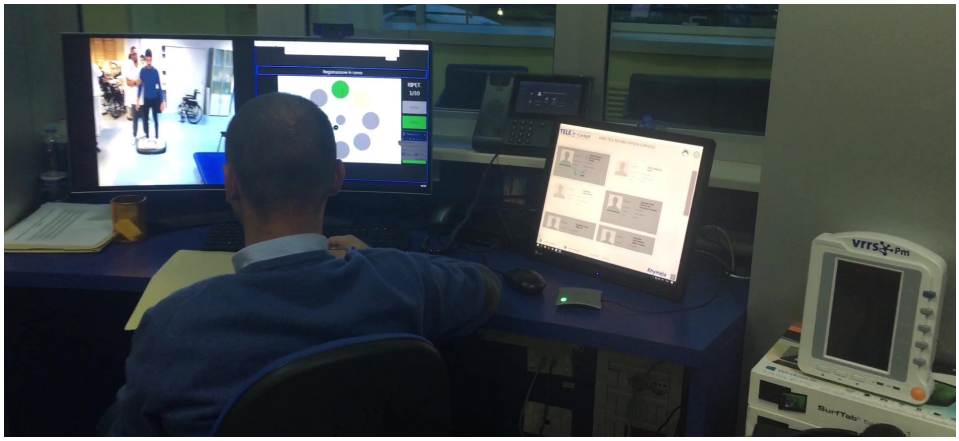

Figure 2 shows a physiotherapist supervising though the Cockpit station a balance training before discharge.

Thank you very much for the interview!

TELEREHABILITATION IN CANADA

Université de Montréal

Dr. Dahlia Kairy
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Dr. Dahlia Kairy is an Associate Professor at the Université de Montréal. She has been publishing research examining Telemedicine and Telerehabilitation since 2008. In 2009, she was first author on an extensively cited review of telerehabilitation. Her team is currently examining the rehabilitation of persons with stroke using a telerehabilitation interface.

Gerry Fluet interviewed Dr. Kairy on June 1, 2020.

GF: Your field, telemedicine and telerehabilitation more specifically, is in the front and center of national and international discussions on healthcare. It must be interesting to have been thinking and talking about things for years and now all of a sudden, everybody is talking about them.

DK: This is actually something that fascinates me. It's not that the field wasn't taking off. We were getting people's buy-in on the surface, but it was really hard to get actual buy-in in the clinical settings. The research projects were advancing and showing good results, but there were so many obstacles in the clinical settings, not just by clinicians, but in the whole healthcare system. So many obstacles and barriers that the whole field just didn't take off. Then all of a sudden, a lot of these obstacles disappeared.

GF: With the disappearance of these obstacles in the U.S., a huge section of the healthcare quickly adopted a telemedicine approach to patient interaction with little attention to standards of practice, training or monitoring. In your opinion, are there any best practice steps that you feel clinics or practitioners that are expanding into telemedicine or telerehab should adopt?

DK: I don't think that the literature has enough information for recommendations at that level because a majority of the published research has been efficacy studies. A little work has examined implementation, but not much. We have some good information about which clientele we could do things with and which interventions were safe. For example, one of the biases we encounter often relates to falls and safety in stroke patients. There are telerehabilitation studies training balance in persons with stroke. You can do it, but this doesn't mean you can do it in any way you want. We have found that implementation is what people need guidance with at the beginning. Some of my research colleagues and I have done some webinars online showing clinicians what was possible, what we did to adapt or make sure that tele-rehab interventions were safe from our research experiences.
This said, I hope to learn from this quick uptake to develop best practice to give some guidelines by doing a survey of telerehabilitation use during the pandemic. I think we can learn a lot. We can look at what worked and what did not in a way that we normally can't with our regular research study designs. There is an excellent paper by Bettger et al. that I just read. It presents public policy approaches to providing rehabilitation during the Covid-19 pandemic and telerehabilitation features prominently. This article presents many of the questions we need to be asking to position telerehabilitation in the healthcare systems more effectively going forward.

Dr. Dahlia Kairy

GF: There are several well-developed tele-medicine packages that have been available for years. This said, many in the U.S. are practicing right now via Facetime, Facebook, Zoom, WebEx etc. What do you feel are the most important strengths of the packages specifically designed for telemedicine and in what situations would they be the most appropriate for?

DK: So I think that the problem with the more commercial applications is that you're at the mercy of these large companies and they make updates, they make changes, this can be difficult for small practices to to follow. In addition, he or she is not necessarily equipped to know what's appropriate, what's not, what's secure, what's not. In a time

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of a pandemic, some of these issues became less critical, less important. Getting patients access to services was more important than ensuring that it was necessarily secure. I don't think this will hold in the future.

GF: Are the rehabilitation clinics in Canada adapting general telemedicine systems or systems designed specifically for telerehabilitation?

DK: What I've found, but that's just my impression, is that first of all, in Canada, we have a large public health care system as well as some private services for rehabilitation. Larger practices in the private system tended to very quickly go with the commercially available telemedicine system. Some of the applications they were using before integrated these commercially available platforms, so that they ended up having one package that could do scheduling, note taking and the face to face sessions, for example. So they chose those quickly and the companies that offer them were very quick to jump on board and integrate telecommunications into their platform. Smaller rehabilitation providers that work in the private sector have shown more interest in the telerehabilitation applications I think because they can communicate with the researchers or those who designed the systems and actually have them tailored a little bit more to their needs. And then in the public sector, in Quebec anyways, it's been challenging because they had to identify very quickly which platforms they would okay across the board, not just in rehab. Getting other rehab-specific systems okayed in the public system is much more challenging.

GF: In the US, a majority of the telemedicine conducted to date incorporates interviewing, vital sign monitoring, some simple exams, consultation, referral and teaching. There isn't much if any physical activity. When we're switching the conversation from telemedicine to telerehabilitation is there anything important to consider?

DK: This is an interesting question because that's the main concern I'm hearing from clinicians, they are comfortable doing education but they are not certain that what they are doing is as good as what they would be doing in person. I think there's a lot we can learn about the importance of education and getting patients more active during telerehabilitation sessions and I'm hoping to get this type of information from the survey I described. I hope that we can provide some examples to clinicians of what you can or can't do and how to be creative and possibly provide the more hands on part of it. Of course there are certain things you can do and some you can't. Can you have a caregiver do some of the stretches that you might do? Possibly. I think it depends on the context. The biggest message that I give the clinicians always is use your clinical judgment. That's what prevails. If you think you can try something remotely and then decide it's not the best way of doing it, you need to say "I'll keep it for when I see them in person". This isn't a problem. Going forward I think a combination of the two, telerehabilitation and in person rehabilitation, is ideally what's going to end up happening. In addition, I think that people have also seen the bigger roles that education and coaching play in rehabilitation and a lot of that can be done simply with straight forward audio and video applications.

GF: In terms of published papers or books describing active telerehabilitation are there any papers or books that you would recommend?

DK: There's nothing that could be used to guide interventions that I'm aware of. Everything I've seen is about the patient or the clinician's perspective. So it's not actually how to do it, but it's what their thoughts are. I haven't seen anything yet with the details of the interventions that are done. I would really like to see that.

GF: No one wants to talk about the details of interventions. In my opinion, this is a problem with rehab research in general.

DK: Yes, exactly. And then when you do your own study, it's hard to know which were the parts that worked and which ones you should duplicate. The other thing I think would be useful would be either a review or a repository of outcome measures that you can use online. Ideally, these measures would be validated for online use, but even sharing measures that people are currently using. Clinicians are asking us that a lot and it's very hard as researchers to encourage them to use outcome measures, which haven't been validated for online use. I think it would be great if we could somehow benefit from the experience that's going on to be able to say what is possible to do online and what is not.

GF: Remote outcome measures would be very helpful in my group's work. We have subjects that have completed interventions, but we cannot collect outcome data. We're losing data on compliant subjects.

DK: We have the same issue in our research projects. In some of the projects, we feel that we can do some of the assessments from a distance. So we are doing them so we don't lose a subject after they've been in the study for eight weeks. In others we've had to say, okay, we can't work with them anymore. I think we'll see a lot of studies in the literature that will be in the same situation.

TELEREHABILITATION IN CANADA

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GF: Do you feel that there are important strengths or weaknesses when you're including a VR component in a telerehabilitation intervention?

DK: I have one project where we combine the two. So they do VR and they also do VR with telerehabilitation, with the therapist watching them interacting. The VR allows the therapist to adapt the exercise program. It also allows her to use a lot of motivational strategies to get them to be adherent and use it repeatedly. The VR combined with telerehabilitation also allows the patients to integrate some of their gains into their usual daily activities.

GF: In your opinion, what does a clinician need to think about when they're trying to include virtual reality in their telerehabilitation interventions?

DK: I think that the clinician should be looking at the level of difficulty of the activity that you give a patient. And it depends on the person because, for some people, too easy is boring and they'll stop and if it's too easy it will limit their gains. For others, too difficult will make them frustrated and they'll stop. So I think it's not one size fits all and telerehabilitation allows you to get more information about this.

GF: We're seeing a similar heterogeneity when it comes to challenge in our subjects. The same with novelty. Some want the simulations to look different. They want different music, different visuals…… a game that changes a lot. Other people are thrilled to death with playing the same game the same way, over and over and over. Some of our subjects are asking about competition; others don't want to compete they just want to do their best. This has been really interesting for us too.

DK: I think that all those things are what a clinician does when they choose exercises that they give a to a person in usual in-person interactions. They use their clinical reasoning. So this is what should be done using telerehabilitation. I also think that there should be a way through AI to be able to do this type of clinical reasoning using a few questions. Questions about the patient's interests, the activities they need to improve, things like that. Use this information and apply some kind of an algorithm to give the best parameters for a game, and then ask a few more questions along the way and it adjusts the game further. I think that it's a question of being aware that we're not all the same, we don't all have the same interests and this plays an important role in rehabilitation.

GF: Is there anything else you think would be interesting or important for our society to start thinking or talking about all of the telerehabilitation that's going on currently?

DK: I know at this point, we are saying that telemedicine is going to stay after the pandemic is over. It's interesting because right now, Montreal is still quite a hot zone, but around us it's really not. Clinics are reopening and the therapists who were using telemedicine are now putting all their energy into setting up their clinics to be safe for in person rehabilitation. A lot have cut out the telemedicine part for now. So I'm not sure that it's going to be as easy as we think to get people to continue using telerehabilitation. I think we're going to have some work to do. We are going to need to identify gaps in services and say, we know from experience that rehabilitation can be offered from a distance. So it is your responsibility, whether it's from a distance or in person, to provide access to these underserved populations. Also, I think it might be interesting to do a session at ICVR or a journal special issue on lessons learned from this rapid uptake of telerehabilitation. Something like that would be interesting.

Winner of the 2020 ISVR Early Career Investigator Award

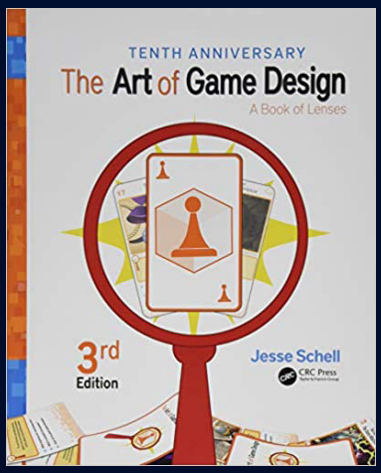
The purpose of the ISVR Early Career Investigator Award is to recognize and acknowledge outstanding contributions by early career scientists whose research relates to virtual rehabilitation. The recipient is given $500 as well as an opportunity to deliver a talk at the next ICVR or ICDVRAT conference. The award was sponsored this year by Bright Cloud International https://brightcloudint.com/, a company whose mandate is to create new rehabilitation technology which uses virtual reality, custom therapeutic games and their intellectual property in order to make the therapy efficacious and fun! Their pioneering work has been shown to benefit chronic patients' post-stroke, traumatic brain injury, and dementia.

Dr. Tal Krasovsky, a senior lecturer in the Department of Physical Therapy at the University of Haifa was selected as the 2020 recipient of the award. Dr. Krasovsky gave a talk on "Technology for motor performance: from facilitator to barrier and back" at the ISVR Annual General Meeting held on July 20 via zoom:

https://drive.google.com/file/d/1R9Bwbbud3G-b6fom4N7qNruBL5jyNF6e/view?usp=sharing

(Her talk begins at 1:20:00 of the ISVR meeting recording)

BOOK REVIEW



The Art of Game Design: A Book of Lenses, Third Edition

Book Review by Gerry Fluet

The field of virtual rehabilitation is approaching a crossroads. Many of the technological and financial obstacles to providing accessible virtual rehabilitation experiences have been overcome. These accomplishments lead us to a need to focus our efforts on designing experiences that optimize the ability of our rehabilitation simulations to transform the ability of our patients to move, communicate, interact, think etc…… In my opinion this heightened focus on design should shift our attention to the more mature field of game design. Game designers have been attacking the problem of designing games that people enjoy and play a lot, successfully – our community has not achieved this goal as of yet. In addition, the dopaminergic processes engaged by the high levels of attention and engagement elicited by well-designed games enhance learning – one of the hallmarks of effective rehabilitation. This brings most of the teams in our field to a new obstacle; Game design skills are not part of the training of most of the practitioners in our field.

The 3rd edition of The Art of Game Design, A Book of Lenses, by Jesse Schell (CRC Press) is an excellent reference that provides both foundational knowledge for technologists and therapists hoping to develop game design skills along with a nicely curated set of next steps for further development. The book presents a set of 112 issues to consider, or lenses. Some lenses consider game design in general as a field or career, others consider the design of a specific game. The more specific lenses emphasize developing an understanding of the goals of a game (in our case transformation of some aspect of our participants, or their lives) as well as the interaction between our participants and the games we design. In my opinion, these lenses will provide an excellent foundation for developing a design mindset for our practitioners and also provide a much needed vocabulary to facilitate communication between team members with differing areas of expertise.

The book contains a brief chapter on serious games, which the author prefers to call transformational games, because he feels that the term serious suggests that the games might be less than fun. I had some communication with the author during coronavirus quarantining and asked him about the possible impact of the added attention on digital health might have on transformational games. He shared that "Transformational games, well designed and pointed at the right problems, can be very effective. But identifying those problems, designing the right games, and executing them well is a significant undertaking. I think the recent focus on digital education and health education certainly opens up opportunities for new health-related digital games, the caution being that they take meaningful time and effort to get right". The author's company, Schell Games has several transformational games in development including a game designed to improve the social skills of children with Autism Spectrum Disorder as well as a game designed to hone the diagnostic skills of physicians that can be viewed on their web site.

One of the many strong features of The Art of Game Design is its extensive suggested reading list. Each chapter features at least two and as many as seven suggestions for further study. Many of these resources are free and every one I've read, watched or listened to has been of high quality. Of particular interest to developers of virtual rehabilitation experiences which is available as a free download is the The Transformational Framework: A Process Tool for the Development of Transformational Games by Sabrina Haskell Culyba (ETC). When I asked Schell to recommend conferences or online groups focused on transformational games he offered Games for Change which is holding a Virtual Festival in July of 2020. In my opinion this book and the resources associated with it can be used as tools to help us leverage the progress our field has made over the past two decades and the "legitimacy" afforded to digital health care during the current coronavirus pandemic.

ISVR Society News

The website at http://www.isvr.org acts as a portal for information about the society. We are keen to to enhance the community aspects of the site as well as to to make it the first port of call for people wanting to know what is going on in the field of virtual rehabilitation and its associated technologies and disciplines. Please do visit the site and let us know details of any upcoming events or conferences or news items you would like us to feature on the site. We intend to add further features in the coming year including member profiles; a directory of journals who publish virtual rehabilitation related work; and a list of Masters and PhD level theses completed or currently being undertaken in the field. As well as sending us details of events and news for display, we would welcome suggestions from members about what else they would like to see on the site, or ideas for how we can further develop the virtual rehabilitation community through it.

Please mail webdec@isvr.org with any information/ideas using ISVR INFO in the subject header.

Membership information

Membership of ISVR is open to all qualified individual persons, organizations, or other entities interested in the field of virtual rehabilitation and/or tele-rehabilitation. Membership (regular, student or clinician) entitles the member to receive reduced registrations at ISVR sponsored conferences and affiliated meetings (see webpages for more details). There is also an active ISVR facebook page, which is another source of useful information, currently with 1197 members.

Call for Contributed Articles

- If you are a technology expert in virtual rehabilitation or you have experience in the clinical use of virtual rehabilitation technologies, and would like to be featured in an upcoming ISVR newsletter issue
- If you would like to submit a contributed article relevant to the ISVR community
- If you have any news, summaries of recent conferences or events, announcements, upcoming events or publications

We are looking forward to your contribution! Please contact us at newsletter@isvr.org.

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