UNIVERSIDADE FEDERAL DE CIÊNCIAS DA SAÚDE DE PORTO ALEGRE
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS DA REABILITAÇÃO

Caroline Santos Figueiredo

Viabilidade, Segurança e Confiabilidade de Uma Avaliação Online Utilizando um Teste Funcional em Adultos Mais Velhos Com e Sem Doença de Parkinson

Porto Alegre

2022

Caroline Santos Figueiredo

Viabilidade, Segurança e Confiabilidade de Uma Avaliação Online Utilizando um Teste Funcional em Adultos Mais Velhos Com e Sem Doença de Parkinson

Dissertação submetida ao Programa de Pós-Graduação em Ciências da Reabilitação da Universidade Federal de Ciências da Saúde de Porto Alegre como requisito para a obtenção do grau de Mestre.

Orientadora: Profª. Drª. Aline de Souza Pagnussat

Porto Alegre

2022

Catalogação na Publicação

Figueiredo, Caroline Santos
Viabilidade, segurança e confiabilidade de uma avaliação online utilizando um teste funcional em adultos mais velhos com e sem doença de Parkinson / Caroline Santos Figueiredo. -- 2022.
53 p. : il., graf., tab. ; 30 cm.

Dissertação (mestrado) -- Universidade Federal de Ciências da Saúde de Porto Alegre, Programa de Pós-Graduação em Ciências da Reabilitação, 2022.

Orientador(a): Profa. Dra. Aline de Souza Pagnussat.

1. Doença de Parkinson. 2. Consulta remota. 3. Telessaúde. 4. Telerreabilitação. 5. Teste de sentar e levantar cinco vezes. I. Título.

Sistema de Geração de Ficha Catalográfica da UFCSPA com os dados fornecidos pelo(a) autor(a).

Viabilidade, Segurança e Confiabilidade de Uma Avaliação Online Utilizando um Teste Funcional em Adultos Mais Velhos Com e Sem Doença de Parkinson

BANCA AVALIADORA

_____

Dr. Carlos Roberto de Mello Rieder
Professor Adjunto – Neurologia
Universidade Federal de Ciências da Saúde de Porto Alegre

_____

Dr. Felipe de Souza Stigger
Professor Adjunto - Departamento de Fisioterapia
Universidade Federal de Ciências da Saúde de Porto Alegre

_____

Dra. Fabiana Carvalho
Pesquisadora Pós-Doutoranda em Epidemiologia
Universidade Federal do Rio Grande do Sul

Porto Alegre
2022

Dedicatória

Dedico esse trabalho a minha avó Noemi (*in memoriam*), cujo amor e carinho foram essenciais para eu ser quem sou.

AGRADECIMENTO

Agradeço à minha orientadora, Profª Drª Aline de Souza Pagnussat, a quem muito admiro, por ter guiado meus passos desde a graduação até o presente momento. Sou grata pela confiança, pela paciência e pelo constante incentivo na busca do melhor.

Agradeço à futura doutora e excelente pesquisadora/fisioterapeuta /bailarina/professora Camila Pinto, que tive a honra de receber o convite para trabalhar junto em seu projeto incrível e que culminou no presente trabalho da dissertação. Agradeço por ter confiado em mim como avaliadora do trabalho que realizas com tanto amor e dedicação. Agradeço a todos membros do Grupo de Pesquisa em Análise do Movimento e Reabilitação (GNeR), em especial ao Alexandre, por contribuir com a revisão do artigo.

Aos alunos de iniciação científica do projeto “TeleDança”: Thainara, Francisca, Isabela, Vinicius e Ivan. Em meio a todas as incertezas da pandemia, vocês abraçaram o projeto e foram essenciais em cada etapa para que tudo desse certo. À Maria Laura, agradeço por ter embarcado em mais uma jornada contigo. Após sermos colegas na graduação e fundarmos a Liga acadêmica de Neuroreabilitação (LiNReab), ainda assumimos um grande projeto de mestrado em conjunto. A tua parceria tornou possível seguir na pós mesmo nos momentos mais difíceis. Às queridas Ludimila e Larissa, alunas de iniciação científica que participaram de outro projeto realizado nessa minha trajetória, o meu agradecimento por terem auxiliado nas coletas.

A todos pacientes que participaram dos projetos realizados durante o mestrado, que toparam confiar em nosso trabalho e contribuir para a construção do conhecimento. A todas as amigas que estiveram comigo torcendo para a chegada desse momento, obrigada!

Ao meu parceiro de vida, Carlos Eduardo, pelo apoio desde o início dessa decisão e por não ter me deixado desistir. À Dinair e Edison Paiva, que sempre me acolheram com um carinho fraternal e me deram suporte.

Por fim, às pessoas mais importantes da minha vida, meus pais, Márcia e Wilson. Tudo o que sou, se deve ao grande papel que exerceram e aos investimentos (os quais foram com muito sacrifício) na minha educação desde cedo. Obrigada por serem minha maior torcida, onde quer que estivessem.

RESUMO

O uso da tecnologia ampliou o acesso à saúde, principalmente para indivíduos que residem longe dos grandes centros ou possuem dificuldades de deslocamento. Para indivíduos idosos ou que estão entrando nessa faixa, é necessário um acompanhamento médico, principalmente nos casos em que é necessário um monitoramento de sintomas que podem ser agravados com o passar do tempo, particularmente em condições degenerativas, como na doença de Parkinson (DP). Com o aumento da longevidade e das doenças relacionadas à idade que exigem um monitoramento, soluções como a telessaúde devem ser colocadas em prática quando o formato presencial não for possível. Sendo assim, o objetivo do trabalho foi verificar a viabilidade, a segurança e a confiabilidade de uma avaliação online utilizando o Teste de Sentar e Levantar Cinco Vezes (TSLCV) em adultos mais velhos com e sem DP. Também foram investigadas as barreiras encontradas pelos participantes e pelo avaliador na teleavaliação. Esse foi um estudo transversal, onde os indivíduos foram avaliados de forma remota através de videoconferência. Foi desenvolvido um *guideline* OMPEPE (na sigla em inglês: *Objective; Materials; Position-Start; Execution; Position-End; Environment*) a fim de padronizar e garantir o entendimento de todas as etapas necessárias para a execução do TSLCV, o qual é um teste físico que requer a transferência da posição sentada para ortostase. As avaliações foram gravadas e reavaliadas após 1 ano para verificar a confiabilidade intra e inter-examinador. Para avaliar a viabilidade, os participantes e o examinador responderam um questionário online sobre autopercepção logo após a teleavaliação. Foram avaliados 29 indivíduos, 12 no grupo Parkinson e 17 no grupo de adultos mais velhos, com média de idade de 69,0 e 67,6 anos, respectivamente. Os resultados provenientes do questionário e da ausência de efeitos adversos mostraram que a teleavaliação, a partir de um teste físico, mostrou-se viável e segura para adultos mais velhos com e sem DP. O TSLCV realizado de forma online apresentou uma excelente confiabilidade intra e inter-examinador (ICC > 0.90). O *guideline* OMPEPE englobou instruções específicas para garantir a melhor condução da teleavaliação, podendo auxiliar de forma importante a sua realização por profissionais da saúde e pesquisas remotas em saúde. Dessa forma, o presente estudo apoia a realização de

avaliações de forma online utilizando uma avaliação física nessa população e incentiva o uso do *guideline* OMPEPE para guiar profissionais de saúde, padronizar o teste e orientar da melhor forma adultos mais velhos com ou sem DP. Ainda que apresentem desafios a serem superados, como dificuldades no uso de dispositivos eletrônicos pela população incluída e atrasos da conexão com a internet, é importante que sejam realizados mais estudos utilizando a avaliação online em diferentes populações, tendo em vista o aumento na longevidade e no uso da tecnologia.

Palavras-chave: Doença de Parkinson; Consulta Remota; eSaúde; Telessaúde; Telerreabilitação; Teste de Sentar e Levantar Cinco Vezes.

ABSTRACT

The use of technology has expanded access to health care, especially for individuals who live far from large centers or have mobility difficulties. For older adults or those who are entering an older age, medical follow-up is necessary, especially in cases where it is necessary to monitor symptoms that can be aggravated over time, such as in degenerative conditions, present in Parkinson's disease (PD). Increasing longevity and age-related illnesses require monitoring, solutions such as telehealth should be considered when face-to-face care is not possible. Therefore, this study aimed to verify the feasibility, safety, and reliability of an online assessment using the Five Times Sit-to-Stand Test (5TSTS) in older adults with and without PD. This was a cross-sectional study, where individuals were evaluated remotely through videoconferencing. We developed the OMPEPE guideline (Objective; Materials; Position-Start; Execution; Position-End; Environment), to standardize and ensure the understanding of all necessary steps for the 5TSTS, which is a physical test that requires transfer from a sitting to a standing position. The teleassessments were recorded and re-scored after 1 year to verify intra- and inter-examiner reliability. To assess feasibility, participants and the examiner completed an online self-perception survey immediately after the teleassessment. 29 individuals were evaluated, 12 in the Parkinson's group and 17 in the older adults group, with a mean age of 69.0 and 67.6 years, respectively. Through the survey and the absence of adverse effects, teleassessment using a physical test was shown to be feasible and safe for older adults with and without PD. The 5TSTS performed online showed excellent intra- and inter-examiner reliability (ICC > 0.90). The OMPEPE guideline included specific instructions to ensure the best conduct of the teleassessment, which can significantly assist in its performance by health professionals and remote health research. As a result, the present study supports the performance of online assessments using a physical assessment in this population and encourages the use of the OMPEPE guideline to guide health professionals, standardize the test, and better guide older adults with or without PD. Although they present challenges to be overcome, such as difficulties in the use of electronic devices by the population included and delays in connecting to the internet, it is important

that more studies are carried out using online assessment in different populations, with a view to advancing longevity and technology.

Key words: Parkinson’s disease; Remote Consultation; eHealth; Telehealth; Telerehabilitation; Five Times Sit-to-Stand.

LISTA DE FIGURAS

LISTA DE TABELAS

LISTA DE ABREVIATURAS E SIGLAS

5TSTS	Five Times Sit-to-Stand
CI	Confidence Interval
COVID-19	Coronavirus Disease 2019
DP	Doença de Parkinson
ICC	Intraclass Correlation Coefficient
OA	Older Adults
OMPEPE	Objective; Materials; Position; Execution; Position; Environment
PD	Parkinson's Disease
STS	Sit-to-Stand
TSLCV	Teste de Sentar e Levantar Cinco Vezes

SUMÁRIO

1 CONTEXTUALIZAÇÃO

O acesso à saúde tornou-se mais amplo através do uso da tecnologia como uma ferramenta para realizar consultas e monitoramento à distância. Dessa forma, os cuidados em saúde podem chegar às pessoas que residem longe dos grandes centros, que apresentam dificuldades para deslocamentos ou que estejam diante de situações em que seja necessário o isolamento social, como vivenciado na recente pandemia de COVID-19[1]. A telessaúde é definida como prestação de serviços de saúde à distância por meio de tecnologias de comunicação e engloba a educação em saúde, gestão em saúde e a prevenção de doenças, realizada por profissionais de saúde, pacientes e familiares. Com a possibilidade do maior alcance na entrega dos cuidados em saúde, a telessaúde pode ser uma alternativa para serviços de consultoria entre profissionais e pacientes, diagnóstico e reabilitação à distância[2]. Com o envelhecimento populacional e o aumento da demanda envolvendo custos com cuidado especializado e medicamentos, muitos indivíduos podem não possuir condições financeiras e/ou físicas para realizar um tratamento adequado[3]. Nesse sentido, faz-se necessário considerar alternativas que atendam às necessidades e facilitem o acesso à saúde, sem precisar deslocar-se aos grandes centros.

Realizar o acompanhamento da saúde é importante, especialmente em idades mais avançadas. Alterações fisiológicas acontecem de forma gradual com o envelhecimento, podendo levar a significativa perda de massa muscular e óssea, contribuindo para um declínio na mobilidade, na resistência funcional, no equilíbrio e um aumento do risco de quedas[4]. Além disso, a idade avançada está atrelada ao maior risco para o desenvolvimento de doenças crônicas (cardiovasculares, respiratórias, neurológicas, dentre outras), que podem trazer limitações funcionais e contribuir para o aumento da morbidade e mortalidade nessa população[5]. Com o aumento da expectativa de vida e consequentemente da população idosa, alternativas como a telessaúde poderão suprir a necessidade e atender às demandas inerentes do envelhecimento, as quais requerem uma atenção mais frequente[3,6]. Acompanhar os níveis funcionais dessa população é relevante, especialmente em condições neurodegenerativas, em que o quadro pode se agravar com o passar do tempo, como por exemplo, na doença de Parkinson (DP)[7].

A Doença de Parkinson é uma condição relacionada à idade, com maior predomínio em pessoas idosas[8] e que pode ser classificada em diferentes graus de comprometimento de acordo com a Escala de Hoehn & Yahr[9]. A incapacidade apresentada na doença de Parkinson se deve a degradação dos neurônios dopaminérgicos na substância negra e gera sintomas motores e não-motores, trazendo prejuízos na qualidade de vida desses indivíduos. Apesar da maior prevalência em idosos, a DP também pode afetar pessoas mais jovens e com menos de 50 anos. Sendo assim, essa condição neurodegenerativa é comum e é considerada um problema socioeconômico, afetando aproximadamente 6,1 milhões de pessoas ao redor do mundo[10], podendo exceder 14,2 milhões até 2040[11]. Tendo em vista o aumento da incidência e da prevalência da DP e o seu impacto na qualidade de vida do indivíduo, da família e da comunidade, é importante o acesso ao tratamento que envolve uma equipe multidisciplinar[7]. Com o aumento da população idosa, há um aumento do número de pessoas com o diagnóstico de DP, que poderão conviver décadas com a doença e que chegarão aos estágios mais avançados, que é a fase em que demandam mais cuidados, pela incapacidade acumulada com a progressão da doença[7,10].

Tremor, rigidez, bradicinesia e instabilidade postural fazem parte dos principais sintomas motores da DP. Essas manifestações podem interferir no nível de mobilidade, resistência funcional e equilíbrio desses indivíduos, deixando-os menos ativos para realizar as atividades básicas de vida diária, como o levantar-se e sentar-se de uma cadeira. Nas fases mais avançadas da DP, os sintomas motores podem levar a perdas na capacidade de manter-se de pé e se locomover, aumento do risco de quedas e diminuição do nível de mobilidade, funcionalidade e da qualidade de vida desses indivíduos, aumentando, por consequência, o risco de mortalidade[7].

Dentro de um programa de acompanhamento e de reabilitação, avaliar o equilíbrio e a força de membros inferiores do paciente é importante para traçar objetivos e condutas adequadas. Para isso, uma das ferramentas comumente utilizadas pelos profissionais de saúde e recomendada pela Diretriz Europeia de Fisioterapia para a Doença de Parkinson[12] é o Teste de Sentar e Levantar Cinco Vezes (TSLCV). Esse é um teste confiável, fácil de aplicar, rápido e de baixo custo, que requer poucos materiais e pode ser realizado no ambiente domiciliar[13]. O indivíduo é instruído a levantar-se e sentar-se cinco vezes, o mais

rápido que puder de forma segura e o tempo é cronometrado. Quanto menor o tempo para realizar as cinco repetições, melhor o desempenho. Através do resultado, o TSLCV é capaz de predizer o risco de quedas em indivíduos idosos (>15 segundos)[13,14] e em indivíduos com doença de Parkinson (>16 segundos)[15]. Utilizar o TSLCV em uma avaliação online em idosos, especialmente naqueles com comprometimentos motores devido a DP, poderá ser útil para as situações em que o paciente tenha dificuldade de deslocamento à clínica e garantirá ao profissional a identificação e monitorização, mesmo que a distância, do nível de transferência, da força funcional de membros inferiores e do risco de quedas do indivíduo.

No entanto, para realizar uma avaliação online, é necessário que o indivíduo tenha alguma familiaridade e experiência com o uso da tecnologia, o que ainda pode ser um desafio para as populações idosas. Indivíduos com DP podem apresentar ainda mais barreiras devido aos comprometimentos motores como a diminuição do equilíbrio, que podem trazer prejuízos às tarefas dinâmicas e às atividades de vida diária, como o movimento de levantar-se de uma cadeira, por exemplo[15,16]. Também deve ser levado em consideração que a rede de apoio desses indivíduos é formada, muitas vezes, por cuidadores e familiares que também estão em idade mais avançada[17].

Atualmente, a viabilidade e a confiabilidade da avaliação online já foram demonstradas em estudos com diferentes populações[18,19]. Em sujeitos saudáveis, o TSLCV de forma online apresentou uma boa confiabilidade inter-examinador[20]. Avaliações funcionais também mostraram ser viáveis de forma online, como no estudo de Venkarataman[21], realizado com idosos e que encontrou viabilidade, validade e confiabilidade nas avaliações de desempenho físico como na marcha, avaliada pelo teste *Performance-Oriented Mobility Assessment*. Na população com DP, o uso da telessaúde mostrou-se uma alternativa viável e com confiabilidade para realizar avaliações físicas e funcionais de forma remota, avaliação das atividades de vida diária, função de membro superior e função de mão[22-24]. Para acompanhar os sintomas motores da DP, Stillerova e colaboradores[25] mostraram a viabilidade do uso da teleavaliação para este fim, sendo uma alternativa para melhorar o acesso dos que residem longe dos grandes centros à tratamentos e acompanhamentos,

reduzindo custos financeiros e de tempo relacionados ao deslocamento e tempo de espera[16,26].

Para atender a grande demanda com cuidados que a crescente população idosa e de indivíduos com DP necessita, faz-se necessário estratégias que possam romper as barreiras físicas e financeiras do acesso à saúde. Até onde sabemos, nenhum estudo anterior avaliou de forma online a função e a força dos membros inferiores durante uma tarefa de transferência que requer equilíbrio e mobilidade, como sentar para levantar na população de adultos mais velhos com e sem DP. Nesse sentido, esse trabalho teve como objetivo verificar a viabilidade, a segurança e a confiabilidade de uma teleavaliação utilizando o TSLCV em adultos mais velhos com e sem DP. Também investigamos as barreiras encontradas pelos participantes e avaliador na teleavaliação. Além disso, fornecemos uma *guideline* para a realização de uma avaliação online para indivíduos com DP, que também poderá ser utilizada para abordar outras populações ao realizar avaliações remotas.

2 OBJETIVOS

2.1 OBJETIVO GERAL

Verificar a viabilidade, a segurança e a confiabilidade intra e inter-examinador, de uma avaliação online utilizando o Teste de Sentar e Levantar Cinco Vezes (TSLCV) em adultos mais velhos com e sem doença de Parkinson (DP).

2.2 OBJETIVOS ESPECÍFICOS

- Identificar barreiras relacionadas ao uso da tecnologia por parte dos participantes e do avaliador;

- Sugerir um protocolo para auxiliar a condução de uma avaliação online.

3 ARTIGO 1

Teleassessment using five times sit-to-stand in older adults with and without Parkinson's disease – Guidelines and Barriers.

(Formatado conforme normas do periódico Physiotherapy Research International – *Qualis A4, Fator de Impacto 1.87*)

Caroline Santos Figueiredo 1,3, Camila Pinto 2,3, Isabela Possebon Bevilacqua 3, Ivan Lima Cortez 3, Francisca Pereira 3, Alexandre Severo do Pinho 1,3, Aline Souza Pagnussat 1,2,3

1 Rehabilitation Sciences Graduate Program Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), Porto Alegre, RS, Brazil

2 Health Sciences Graduate Program, Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), Porto Alegre, RS, Brazil.

3 Movement Analysis and Rehabilitation Laboratory, Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), Porto Alegre, RS, Brazil.

Corresponding author:

Aline Souza Pagnussat, PhD

Universidade Federal de Ciências da Saúde de Porto Alegre

245 Sarmento Leite Street

Zip code 90050170 Porto Alegre RS, Brazil.

Phone: + 55-51-3303 8833

Email: alinesp@ufcspa.edu.br

Teleassessment using the Five Times Sit-to-Stand test in older adults with and without Parkinson's disease – Guidelines and Barriers.

Abstract

Background and purpose: The assessment of lower limb strength, balance and fall risk, particularly in adults and older population are important components of rehabilitation. Given the increasing interest of telehealth, teleassessment has been investigated as an alternative when in-person evaluation is impossible. The Five Times Sit-to-Stand test (5TSTS) is a way to quantify functional lower extremity strength and/or identify strategies for transitional movements. The literature is unclear about the viability and safety of teleassessment using the 5TSTS in frail populations, such as those with Parkinson's disease (PD). This study aimed to test the reliability of the teleassessment using the 5TSTS and verify its feasibility and safety for older adults with and without PD.

Methods: Cross-sectional study that included older adults with and without PD who were evaluated remotely through a videoconference platform. To ensure effective and comprehensive instructions for the test, we developed a guideline called OMPEPE (an acronym for: Objective; Materials; Position-Start; Execution; Position-End; Environment). We assessed the 5TSTS intra and interrater reliability by comparing scores obtained by the same examiner and by different examiners, respectively. Participants and examiners answered online surveys to register information about feasibility and safety.

Results: Twelve individuals with PD and 17 older adults without PD were included in this study (mean age of 69.0 and 67.6 years, respectively). Based on the perspectives of the participants and the absence of adverse effects, teleassessment using the 5TSTS is feasible and safe for older adults with and without PD. Excellent intra- and interrater reliability (ICC > 0.90) was found for all measurements of the 5TSTS test.

Discussion: This study showed the feasibility, safety and reliability of teleassessment using the 5TSTS. The guideline developed may help health professionals to minimize barriers and safely perform an online assessment by including a physical test such as the 5TSTS in older adults with or without PD. In

addition to minimizing technological barriers, guideline OMPEPE ensures the best execution of evaluations.

Conclusion: Teleassessement using the 5TSTS for older adults with and without PD is feasible and safe. Synchronous and asynchronous online 5TSTS tests have excellent intra and interrater reliability.

Key-words: Parkinson’s disease, remote consultation, eHealth, telehealth, telerehabilitation, five times sit-to-stand

Introduction

The use of telehealth is growing due to several situations, including the COVID-19 pandemic. Although remote assessment (teleassessment) through online platforms is a good option when face-to-face is impracticable, some challenges might occur[1]. In particular, teleassessment may be challenging for older adults due to low experience or familiarity with technology devices. Additionally, older adults living with Parkinson's disease (PD), might face even difficulties when attending an online assessment due to motor impairments and balance difficulties. In this population, dynamic tasks may be challenging and impact daily life activities – as may be the case of the sit-to-stand task.

Several studies have already demonstrated the feasibility and reliability of online assessments in different populations. In patients with chronic musculoskeletal conditions, a high level of agreement was found between online and face-to-face assessments[2]. In the older adults population, a study investigated the feasibility, validity, and reliability of online assessments on physical performance[3]. The authors found that the online gait assessment using the Tinetti Performance-Oriented Mobility Assessment is feasible to be performed using conventional internet speed and video quality.

In individuals living with PD, interrater and intrarater feasibility and reliability were found when physical and functional assessments[4], activities of daily living[5], upper limb function[4,5] and hand function[6] were compared between face-to-face and remote assessments. Additionally, motor symptoms can be remotely monitored in people with PD, as an alternative to overcome mobility difficulties and the high costs of healthcare for those people who live in remote areas[7].

The sit-to-stand task may be impaired in individuals living with PD because it requires lower limb strength, mobility, endurance and balance. This task can be assessed using the Five Times Sit-to-Stand (5TSTS) - a quick and easy test that measures functional lower extremity strength and can be used as a risk of falls predictor[8]. A previous study has already shown the FTSTS is a highly reliable test[9], and is also a tool recommended by the European Physiotherapy Guideline for Parkinson's disease[10]. This test can be useful in those situations where the

patient has reduced mobility or due to the need for social isolation, as we experienced during the COVID-19 pandemic[11].

To our knowledge, no previous study has assessed lower limb function and strength remotely during a task that requires strength, balance, and mobility, such as the 5TSTS. Our intention with this study was to verify the feasibility, safety, reliability, and barriers of teleassessment using the 5TSTS for older adults with and without PD. Furthermore, we tried to provide pilot guidelines for conducting teleassessment, which might be suitable to be applied in other neurological populations.

Methods

Participants

This cross-sectional study was conducted through a large project and was approved by the Ethics Committee of Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), Brazil (under protocol: 4.165.923). We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist[12]. Community-dwelling older individuals with and without PD were recruited between August 2020 and September 2020.

The inclusion criteria were: a) individuals aged 45 years or older with and without PD according to UK Parkinson's Disease Society Brain Bank's[13]; b) minimal cognitive ability to understand verbal commands according to Mini-Mental State Examination (MMSE) (>24 literate and >20 illiterate)[14]; c) able to stand at least 10 minutes with or without support; d) dopamine medication stable at least 6 weeks before the beginning of the study (only for those with PD); and e) access to a portable device and internet connection. The exclusion criteria were: a) severe visual or auditory impairments; b) another neurological diagnosis than PD; and c) self-repot of severe neuromuscular disorders that could interfere with the examination.

The study was publicized through the university media (website and email lists), social media, nursing homes, and PD associations all over the country. The digital content included a QR code and a link form for participating. In this first

form, people were required to fill out general questions, internet access and device portability, self-perception of balance and gait impairments, mobility inside and outside home, history of falls in the last 12 months, use of walking devices, information about the PD diagnosis, PD symptoms and use of the Deep Brain Stimulation devices. Individuals who met the eligibility criteria were invited to participate in the study and scheduled an initial assessment via synchronous videoconferencing by *Zoom* platform. At that moment, the researcher recorded the video call, shared their screen and read the written informed consent. Participants who agreed to participate in the study signed the printed term and forwarded the scanned document. At that time, the following assessments were carried out: MMSE, IPAQ-Short Form (IPAQ-SF), medication use, Hoehn & Yahr scale for PD (accessed previously by a physician or health professional), and the New Freezing of Gait Questionnaire for PD[15].

The application of the MMSE was performed by video call in an adapted way[16]. The participant was asked to reserve a paper and a pen for this assessment to carry out the 'language' and 'constructive skill' sessions. For the 'close your eyes' command, the evaluator shared his screen with the sentence. All responses were scored by the evaluator in the same way as in person. For the IPAQ-SF, the evaluator shared his screen with the questions so that the participant could follow and answer them in the video call.

Procedures

Teleassessments were conducted through video conference using the Zoom platform. The evaluation session lasted approximately one hour and included the STS test and a structured interview with general questions – here, the evaluator shared their computer screen and asked the participant to follow carefully.

Previously, all participants received all instructions by telephone call, email, and chat messenger. The instructions were provided by video tutorials and written information, including a “step-by-step” on managing the device, entering the *Zoom* platform, and testing procedures. Participants received instructions that

included: a) be accompanied by a family member or caregiver on the assessment day; b) use comfortable clothes and stable shoes (preferably sneakers); c) reserve a wide room space so the evaluator could see the participant standing and sitting on the chair; d) have a stable chair without lateral forearms support which allows for the full ground feet support and the knees aligned with the hips[17]; e) keep the device (e.g. computer, notebook, or tablet) plugged into a power socket.

Participants living with PD were evaluated in their optimal *on*-stage dopamine medication. If any situation occurred that compromised the participant's safety (e.g., near falls), the researcher was instructed to interrupt the evaluation and register the reason. During the online assessments, the evaluator also registered difficulties and adversities, such as the number of internet outages and delays through out the connection. We also recorded situations where participants faced difficulties joining the video call, needed assistance, or requested further explanations about the questionnaires and tests.

To ensure effective and comprehensive instruction to participants, we developed a guideline to be followed when describing the task for participants, which we called: OMPEPE. The OMPEPE guideline was used in tutorials before the evaluation and during the teleassessment. The acronym OMPEPE encompasses the objective, materials, position to start the test, execution, position to end the test, and environmental modifications to guarantee safety and effective performance. The acronym was used to standardize the procedures and to guarantee that all participants would receive similar instructions.

OMPEPE Guideline

The guideline consists of six steps as detailed below (see the **Supplementary Material 1** for details)

1) **O (Objective):** Describe the objective and the duration of the test. At this point, the participant must understand the reason for doing the test.

2) **M (Materials)**: The list of required materials was informed previously (e.g., chair). On the assessment day, the examiner only checked if all the materials were available.

3) **P (Position - Start)**: Explain (verbally) and show (visually) the starting position for the test. At this point, participants were instructed about the correct initial position for the test and were familiarized with the verbal command to initiate it.

4) **E (Execution):** Explain (verbally) and show (visually) how the test must be performed.

5) **P (Position – End):** Explain (verbally) and show (visually) the correct end position for the test. At this point, participants were instructed and familiarized with the verbal command to finish the test and what to do next.

6) **E (Environment).** Describe how the room should be organized to guarantee a safe environment. Checking possible hazardous furniture (e.g., carpet) or situations that could compromise the assessment (eg surrounding people or animals). The evaluator must orientate for environmental adaptations according to the patients' conditions or limitations.

OUTCOMES

Five Times Sit-to-Stand Test (5TSTS) – Intrarater and Interrater Reliability

The 5TSTS requires the ability to transfer from a sitting to a standing position and measures the functional lower extremity strength[9]. Participants were instructed to use a chair without lateral supports so that when sitting, their knees and hips were flexed at approximately 90° with their feet positioned in a self-selected manner. Individuals were required to wear comfortable shoes and reserve a wide room space. We instructed the participants to place their devices

in a lateral position, so the evaluator could see the trunk and lower limbs and monitor the test performance (**Figure 1**).

Before starting the test, individuals were instructed to keep their backs supported on the back of the chair, arms crossed over the chest, and feet flat on the floor. Participants were allowed to sit further forward when necessary to place their feet entirely on the floor. On the command of “GO”, participants should stand up and sit down as quickly as possible during five repetitions at a self-selected and safe speed. The evaluator registered the time since the “GO” command until the end of the test (when the participant touched their hips on the chair). Those participants who were accompanied by a home assistant and/or presented minimal risk of falls were instructed to lean their chair against a wall or ask the assistant to remain behind the chair for safety. Participants performed one familiarization trial before starting the evaluation. There was a rest period of 2 minutes between trials.

The 5TSTS was scored in real-time during the video calls by the same evaluator (C.S.F). Video calls were also recorded for posterior evaluation. For intrarater reliability, video records were scored by the same evaluator (C.S.F.) after one year. For interrater reliability, a second evaluator (C.P.) scored the videos also after one year. During the scoring process, the investigators did not interact, and both were blinded to the previous scores.

Feasibility and safety

Feasibility was determined through the register of barriers during the teleassessment (e.g., internet connection, familiarization with technology, command understanding). In addition, feasibility was also assessed by a survey answered by the participants. Safety was determined by registering the occurrence of adverse events (e.g., falls or near falls).

Survey

Immediately after the teleassessment, participants received a link to access an online survey (*Survey Monkey*®) adapted from a previous study[18,19]. The adapted version included nine questions covering difficulties in joining and

performing remote evaluations. Participants were asked to choose one of four alternatives for each question with all mandatory answers. The questions were prepared in a digital format, where a new question appeared as the previous one was answered, simulating a conversation via text message, and making them more intuitive and easier to answer. The survey was formatted to allow the responder to return to the previous question and change their answers. If necessary, participants could ask for help to complete the survey. Participants were able to access the questionnaire link through any device with internet access. One day after, if the participant had not answered the survey, they were contacted by the research team, and those who did not respond were considered 'non-responders'. See **Supplementary Material 2** for details.

The evaluator's perceptions were also registered through a specific survey. This survey included subjective questions related to the quality of connection, video, sound, and overall satisfaction with the teleassessment. The satisfaction rate was based on a Likert scale with five options from 'very bad' to 'very good'. These questions were based on a previous study[20] that provided feedback from the health professionals involved in the delivery of telerehabilitation in post-stroke patients (**Supplementary Material 3**).

Sample size and statistical analysis

A sample size of at least 11 subjects for each group was estimated to find significant agreement between two evaluators, with a power of 90%, a significance level of 5% and an expected intraclass correlation coefficient of 0.75, the minimum value to have good reliability[21]. The calculation was performed using the WINPEPI software version 11.65.

Data analysis was performed using the statistical software IBM SPSS version 20.0 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). Data were analyzed for normality and homogeneity using Kolmogorov-Smirnov and Levene's tests. For demographic data, categorical variables were treated using Pearson Chi-Square and continuous variables were analyzed using a t-test or Mann-Whitney U test, for parametric and nonparametric respectively.

The results of the synchronous evaluation of the 5TSTS are expressed as the mean and 95% confidence interval. General Linear Model (GLM) test was

used for intragroup and intergroup comparison of independent sample means of the fastest trial and the average of all trials of the 5TSTS.

Intra- and interrater reliability of the 5TSTS data was evaluated using intraclass correlation coefficients (ICCs) using the 2-way mixed effects model, using ‘single measure’ (ICC 3.1) and ‘average measure’ (ICC 3.k) for fastest and average scores respectively. Based on the 95% confidence interval of the ICC estimate, we suggest that ICC values than 0.5 are indicative of poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability, and values greater than 0.90 indicate excellent reliability[22]. The limits of agreement described by Bland and Altman[23] were used to examine the differences between real-time online assessments and intra- and interrater assessments. 95 percent of the differences found in the evaluations will be within the range of the limits of agreement.

The Mann-Whitney test was performed to verify differences in the Survey scores between the groups. Survey data are presented in percentages. The level of significance was set at $p<0.05$.

Results

Twenty-nine individuals were included in this study: PD group (n=12) and Older Adults (OA) group (n=17), with a mean age of 69.0 and 67.6 years, respectively. Even though recruitment was open for people over 45 years old, individuals interested in participating in this study were majority over 56 years old, which classifies these adults as entering the elderly phase. To best characterize our sample who presented a mean age of 67-69 years old, we use the term 'older adults'.

Groups were statistically different at baseline regarding the number of falls and mobility outside the home. In the PD group, one individual reported more than 10 episodes of falls in the previous year. In the OA group, fifteen subjects reported no falls. Regarding the outside home mobility, most of the OA group self-reported them as “independent”. In the PD group, most participants self-reported that they needed “supervision”, at least. Table 1 depicts the sample characteristics.

Regarding the devices used for the teleassessment, 19 participants used a notebook (65%), four used smartphones (14%), and two used tablets (7%). Four participants used a notebook and a smartphone simultaneously (14%). Fifteen participants (PD=7; OA= 8) were accompanied by a family member during the assessment (52%).

Five Times-Sit-to-Stand (5TSTS) - Intrarater and Interrater Reliability

Table 2 shows the mean of all trials and the fastest performance for each participant. PD performed slower than OA when both the mean (*p=0.006*) and the fastest attempt (*p=0.007*) were analyzed. No difference was found comparing the mean of trials with the fastest trial within each group (intragroup analysis).

Regarding the number of unexpected events during the 5TSTS assessment, the PD group showed a total of twelve failures that occurred for different reasons: weakness or pain (5); internet problems (5); difficulty understanding the commands (2). The OA group had eight episodes of failures: weakness or pain (1); internet problems (6); difficulty understanding the commands (1). When one of these unexpected events occurred, the evaluator requested the participant to make one more attempt. In other words, the failed attempt was not considered in the analysis.

Individuals who were unable to get up from the chair without support were considered as ‘needing assistance’, and the test was recorded. Two individuals with PD performed the 5TSTS test with some assistance: with hand support on the chair (1); with hand support on their knees (1). A score of 40 seconds was assigned to these participants, which was approximately 1 SD higher than the slowest performance time in the PD group[8]. Six participants (PD=3; OA=3) whom family members did not accompany during the assessment had their 5TSTS results above the cut-off point for classification between fallers and non-fallers[8,24]. That is, they are individuals who can be classified as at risk of falling and, despite previous instructions for teleassessment, were not accompanied. despite previous instructions for teleassessment.

Table 3 shows the intra, interrater reliability and limits of agreement comparing real-time teleassessment with the recorded video analysis. Two individuals (one from each group) were not included in the analysis due to recording technical problems. The intraclass correlation coefficient evidenced excellent intra and interrater reliability for all measures evaluated in both groups (ICC > 0.90).

Feasibility and safety

Eight participants from each group requested assistance to access the video call link (55%). During the teleassessment, interruptions occurred with six participants due to failures in the internet connection (PD=2; OA=3) and lack of battery (OA=1), and the video call was reconnected to continue. Fifteen participants (PD = 5; OA = 10) had some episode of network delay during the assessment. Half of the participants in the PD group (50%) needed more than one explanation to perform the test, against 24% in the OA group. We did not register any intercurrences or adverse events (e.g., falls or near falls) during the teleassessment.

Twenty-seven participants responded to the survey (PD= 11; OA=16). In both groups, most participants said they had "slightly difficulty" in using technology for teleassessment. In general, the PD group showed more difficulties with the use of technology and comprehension of instructions. Most participants rated as ‘valuable’ the video tutorial sent previously to the teleassessment session. Despite the differences in percentages, there was no significant difference between groups (**Figure 2**).

Finally, the evaluator scored their satisfaction as “good” for all the questions about the quality of internet connection, video, and sound. Overall, the researcher was satisfied with the provision of an online assessment for both older adults and individuals with PD.

Discussion

Our study concluded that remote online evaluation using a physical sit-to-stand test (5TSTS) is feasible, safe, and reliable for older adults with and without Parkinson's disease and with risk of falls. We also provided the barriers (i.e., internet interruptions and delays, some difficulty using technology and understanding instructions) related to remote evaluation in frail populations. Finally, we synthesized a guideline that physical therapists might use to guarantee the feasibility and safety of teleassessment when using a dynamic task.

There were no adverse events that put participants at risk for falls in our study, which demonstrates the safety of performing teleassessment in this sample when following our guidelines. Our sample was classified as at risk of falls for older adults with and without PD, according to previous cutoff classification by Duncan et al.[8] and Buatois et al.[24]. Most individuals who performed 5TSTS *>16s* (PD) e *>15s* (OA) were accompanied by family members during the assessment, following the previous instructions for teleassessment. Thus, we highly recommend that future studies require a family member or a caregiver to accompany the participant when performing a dynamic task remotely. We also reinforce the importance of previously investigating the history of falls for an online functional assessment, prioritizing safety, especially in frail populations. Additionally, we compared the result of the fastest trial and the average of all trials and found no differences within groups. Therefore, the evaluator could choose which data will be considered for analysis.

Despite the sample being made up of older adults, born in a generation before the spread of the internet, half of the participants reported only little difficulty in using the technology for the teleassessment. This fact demonstrates the familiarity of using electronic devices and reinforces the feasibility of using them to conduct physical assessments in these populations. In addition, the video tutorial helped most participants to obtain all the necessary information to understand what the online assessment would be like. Despite some challenges, other studies have also demonstrated the feasibility of teleassessment for these population[5,7].

We found excellent intra and interrater reliability for the 5TSTS test. A previous study[25] with healthy subjects found moderate intrarater reliability and

good interrater reliability for the 5TSTS when comparing face-to-face with teleassessment. Previous studies have also found high intra and interrater reliability for functional outcomes using teleassessment compared to face-to-face assessment for older adults[3~~15~~] and people with PD[4,5].

The 5TSTS instructions followed the guideline OMPEPE we created. Thus, it was possible to guide the evaluator through all the orientation topics to be addressed for the test execution. This guide for teleassessment can help to standardize procedures and avoid missing essential information for the proper execution of the test.

Most of the studies in teleassessment perform the online versus face-to-face comparisons to assess agreement and reliability[2,7,25], including scoring simultaneously[4-6]. Venkataraman et al.[3] demonstrated the feasibility, validity and inter-rater reliability of a functional assessment of gait and cane height in elderly people. Despite the small sample size, the novelty of our study is that it was conducted exclusively in a remote way. It is still necessary to compare the results of remote versus face-to-face assessments using the 5TSTS to conclude its validity in the older adults population with and without PD.

Connection delays and internet failures can directly influence the measurement of some evaluations, as seen in previous studies[3,7,25]. Video and sound quality can be compromised and make communication difficult. In addition to the need to improve the quality of the internet connection, other alternatives to overcome the major issues found at this work, would be as requesting the individuals to be accompanied by a previously trained family member, so that he can give the commands involving the test. Most participants needed some assistance to access the video call and a possible solution would be through the use of a remote-access software that may allow the evaluator to facilitate access to video calls, as was done in another study[20]. Another limitation of teleassessment can be the restricted home space. In cases of narrow spaces, the evaluator must choose a test that fits to the patient's environment or adapt the test without compromising its interpretation. Real-time evaluations based on teleassessment still have some challenges that need greater attention. Thus, future research is needed so it can be established as a common practice in the daily routine of professionals.

The small sample size is due to the fact that this study is parallel to a clinical trial involving online dance interventions for older adults with and without PD. Additionally, the study was conducted during a period when people stayed at home due to social distancing imposed by the COVID-19 pandemic. Individuals with less ability to use technology may have had a better chance of accessing and participating in the project with more family participation. Our study sample consisted of individuals without major mobility restrictions and individuals living with PD, mostly in a moderate stage. In individuals with mobility restrictions or with PD in more advanced stages and without caregivers, the findings of this study may not be replicated. An online assessment using the 5TSTS functional test may not be feasible in these situations.

In conclusion, we support the use of teleassessment with a functional mobility task, using the 5TSTS, as a safe, feasible and reliable option for older adults with and without Parkinson's disease when face-to-face assessments are not possible. The OMPEPE guideline might be useful for professionals to ensure safety and understanding of all steps involved in teleassessment, especially for the older adults population. A clear understanding will improve conducting assessments and collaboration for preparing the necessary materials and environment in their residences. Thus, it is possible to overcome the methodological weaknesses inherent to teleassessment procedures if the OMPEPE guideline proposed in this study is used.

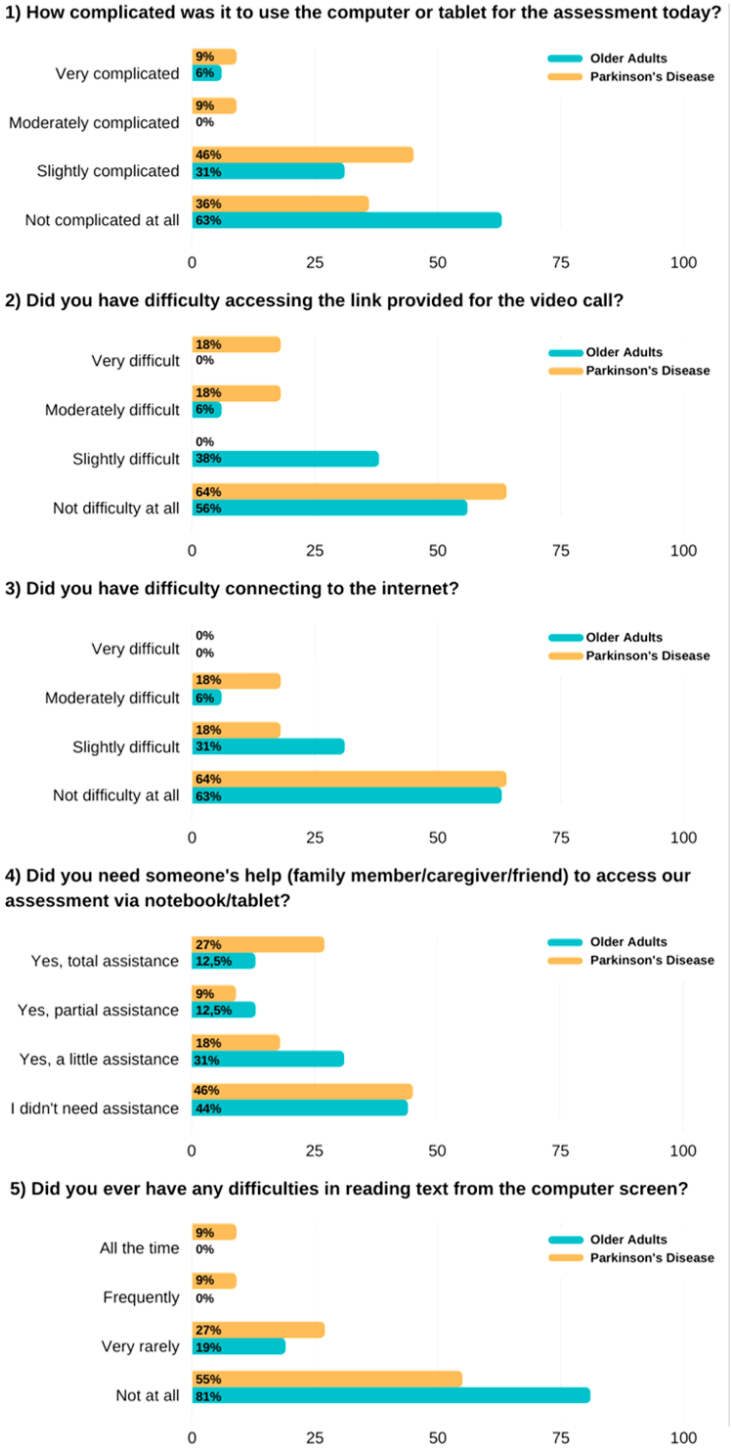
Acknowledgments

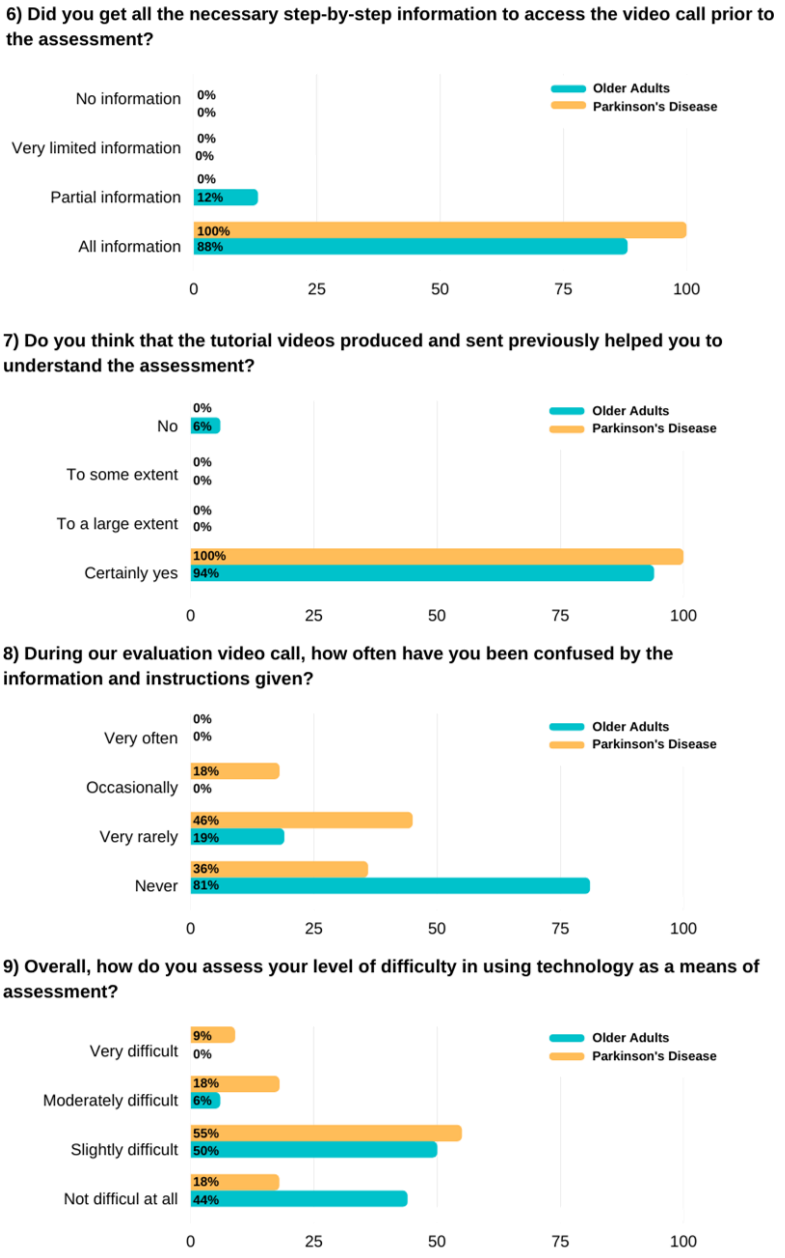
We thank the research team involved in the recruitment and data collection, including Thainara Cruz and Vinicius Mabilia. Special thanks to all participants who made this work possible.

(a) **(b)** **(c)**

Figure 1. **Positions for 5TSTS.** Participants were instructed to use a chair without lateral support so that when sitting, their knees and hips were flexed at approximately 90º. Individuals were required to wear suitable shoes, reserve a wide space, and place the device laterally **(a)**. Those who were accompanied by their relatives and/or presented some minimal risk of falls were instructed to lean their chair against a wall **(b)** or ask the relative to remain behind for safety **(c)**.

Figure 2. Survey results.





Questionnaire adapted by Finkelstein et al.[18] with results from participants (PD=11 and OA=16).

TABLE 1. Descriptive characteristics

	Parkinson's Disease (n=12)	Older Adults (n=17)	p-value
General characteristics			
Gender[a] *(F / M)*	10/2	15/2	0.706
Age[b] *(years)*	69.00 (65.17; 72,83)	67.65 (63.61; 71.68)	0.621
Height[b] *(cm)*	163.42 (157.74; 169.10)	161.00 (156.86; 165.14)	0.453
Body mass[b] *(kg)*	69.25 (61.88; 76.62)	72.76 (66.37; 79.16)	0.448
Educational level[a] *(primary / secondary / tertiary)*	(4/3/5)	(2/2/13)	0.160
Location of domicile[a] *(urban / rural)*	(12/0)	(17/0)	.
MMSE[b] *(0 – 30)*	28.50 (27.81; 29.19)	29.00 (28.52; 29.48)	0.263
Number of falls[a] – last 12 months *(zero / 1-3 / >10)*	(4/7/1)	(15/2/0)	0.008*
Mobility – Inside Home[a] *(assistive device / supervision / independent)*	(0/1/11)	(0/0/17)	0.226
Mobility – Outside Home[a] *(assistive device / supervision / independent)*	(2/5/5)	(0/1/16)	0.007*
IPAQ-SF[a 26] *(high / moderate / low)*	(2/5/5)	(4/8/5)	0.774
Teleassessment characteristics			
Tech device[a] *(notebook / tablet / smartphone / notebook + smartphone)*	(7/1/1/3)	(12/1/3/1)	0.470
Accompanied[a] *(Y/N)*	(7/5)	(8/9)	0.550
PD clinical characteristics			
PD Diagnosis[b] *(years)*	8.58 (4.50; 12.67)		
PD Symptoms[b] *(years)*	8.75 (4.13; 13.37)		
Presence of FOG[a] *(Y/N)*	(6/6)		
NFOG-Q[b] *(0 – 24)*	9.92 (2.77; 17.06)		
Hoehn & Yahr[a] *(1.0 – 1.5 / 2.0 – 3.0 / 4.0 – 5.0)*	(2/8/2)		
DBS[a] *(Y/N)*	(1/11)		
LEDD[b 27] *(mg)*	864.25 (447.55; 1280.95)		

Note: [a] Data are shown in frequency, compared applying the Pearson Chi-Square test. [b] Data are expressed as mean (lower and upper bound of 95% confidence intervals), compared using the t-test or Mann-Whitney U test. * Significant at $p < 0,05$

Abbreviations: F = female; M = male; cm = centimeters; kg = kilograms; MMSE = mini-mental state exam; short-IPAQ = short form of the international physical activity questionnaire; Y = yes; N = no; PD = Parkinson's disease; FOG = freezing of gait; NFOG-Q = new freezing of gait questionnaire; DBS = deep brain stimulation; LEDD = levodopa equivalent daily medication dosage.

TABLE 2. 5TSTS sample performance

Five Times Sit-to-Stand													
Parkinson's Disease (n=12)						**Older People (n=17)**						**Intergroup Comparison***			
	Time (seconds)			**Intragroup Comparison***			**Time (seconds)**			**Intragroup Comparison***		**Mean**		**Faster**	
Participants	**Mean**	**Faster**	**Trials/ Miss**	***Wald Chi-Square***	***p-value***	**Participants**	**Mean**	**Faster**	**Trials/ Miss**	***Wald Chi-Square***	***p-value***	***Wald Chi-Square***	***p-value***	***Wald Chi-Square***	***p-value***
P1	13.28	13.28	4/3			P13	13.05	12.72	3/1			**9.528**	**0.002***	**9.7718**	**0.002***
P2	37.43	36.35	3/0			P14	9.64	9.37	3/1						
P3	14.11	13.91	4/2			P15	19.80	18.88	3/0						
P4	15.20	14.09	4/1			P16	15.77	14.56	3/0						
P5 [a]	40.00	40.00	3/0			P17	16.48	15.40	4/0						
P6	18.76	16.82	3/1			P18	14.07	13.56	3/0						
P7	25.18	21.31	3/0			P19	15.02	14.15	3/0						
P8	29.25	29.25	4/3			P20	13.29	12.41	3/0						
P9	15.00	14.50	4/2			P21	20.57	19.25	3/0						
P10	18.04	17.50	3/0			P22	18.15	17.37	3/0						
P11	14.68	14.07	3/0			P23	29.66	29.66	3/0						
P12 [a]	40.00	40.00	3/0			P24	13.76	12.91	2/1						
Mean (95% CI)[b]	**23.41 (16.67 - 30.15)**	**22.59 (15.75 - 29.43)**		**0.043**	**0.836**	P25	14.94	14.88	4/1						
						P26	19.10	16.68	3/1						
						P27	10.65	9.78	5/2						
						P28	8.94	8.79	3/1						
						P29	12.78	12.06	3/0						
						Mean (95% CI)[b]	**15.63 (13.09 - 18.17)**	**14.85 (12.34 - 17.36)**		**0.262**	**0.609**				

Note: [a] Participants who needed assistance and received a score of 40 seconds (1 SD higher than the slowest performance time) [8]. [b] Data are expressed as mean (95% confidence interval). * GLM test was used for intragroup and intergroup comparison of independent sample means. ** Significant at $p < 0,05$ Abbreviations: 5TSTS = Five times sit to stand test; CI = confidence interval.

TABLE 3. Intra and inter-rater reliability for 5TSTS test

Parkinson Group (n=11)			
Mean		**Faster**	
Intra-rater ICC (95% CI)	**Inter-rater ICC (95% CI)**	**Intra-rater ICC (95% CI)**	**Inter-rater ICC (95% CI)**
1.00 (0.98, 1.00)	1.00 (0.99, 1.00)	0.98 (0.93, 0.99)	0.98 (0.92, 0.99)

Older Adults (n=16)			
Mean		**Faster**	
Intra-rater ICC (95% CI)	**Inter-rater ICC (95% CI)**	**Intra-rater ICC (95% CI)**	**Inter-rater ICC (95% CI)**
0.99 (0.98, 1.00)	0.99 (0.99, 1.00)	0.99 (0.99, 1.00)	1.00 (0.99, 1.00)

Abbreviations: 5TSTS = Five times sit-to-stand; ICC = Intraclass correlation coefficient; CI = confidence interval.

SUPPLEMENTARY MATERIAL 1

To watch **Supplementary Material 1** video, visit the link on YouTube "**https://youtu.be/xX2CTaiZPX8"** or scan the QR code below with your cell phone camera.

Supplementary material 2. *Survey adapted from Finkelstein [18]*

1. How complicated was it to use the computer or tablet for the assessment today?

3 Very complicated
2 Moderately complicated
1 Slightly complicated
0 Not complicated at all

2. Did you have difficulty accessing the link provided for the video call?

3 Very difficult
2 Moderately difficult
1 Slightly difficult
0 Not difficult at all

3. Did you have difficulty connecting to the internet?

3 Very difficult
2 Moderately difficult
1 Slightly difficult
0 Not difficult at all

4. Did you need someone's help (family member/caregiver/friend) to access our assessment via notebook/tablet?

3 Yes, total assistance
2 Yes, partial assistance
1 Yes, a little assistance
0 I didn't need assistance

5. Did you ever have any difficulties in reading text from the computer screen?

3 All the time
2 Frequently
1 Very rarely
0 Not at all

6. Did you get all the necessary step-by-step information to access the video call prior to the assessment?

3 No information
2 Very limited information
1 Partial information
0 All information

7. Do you think that the tutorial videos produced and sent previously helped you to understand the assessment?

3 No
2 To some extent
1 To a large extent
0 Certainly yes

8. During our evaluation video call, how often have you been confused by the information and instructions given?

3 Very often
2 Occasionally
1 Very rarely
0 Never

9. Overall, how do you assess your level of difficulty in using technology as a means of assessment?

3 Very difficult
2 Moderately difficult
1 Slightly difficult
0 Not difficult at all

Supplementary material 3. *Evaluator's satisfaction rate adapted from Øra et. al* [19]

1. Were you satisfied with the connection quality?

Very bad
Bad
Neither good nor bad
Good
Very good

2. Were you satisfied with the video quality?

Very bad
Bad
Neither good nor bad
Good
Very good

3. Were you satisfied with the sound quality?

Very bad
Bad
Neither good nor bad
Good
Very good

4. Overall, how satisfied are you with the teleassessment that was delivered?

Very bad
Bad
Neither good nor bad
Good
Very good

References

1. Chirra M, Marsili L, Wattley L, et al. Telemedicine in Neurological Disorders: Opportunities and Challenges. Telemed J E Health. 07 2019;25(7):541-550. doi:10.1089/tmj.2018.0101

2. Cottrell MA, O'Leary SP, Swete-Kelly P, et al. Agreement between telehealth and in-person assessment of patients with chronic musculoskeletal conditions presenting to an advanced-practice physiotherapy screening clinic. Musculoskelet Sci Pract. 12 2018;38:99-105. doi:10.1016/j.msksp.2018.09.014

3. Venkataraman K, Amis K, Landerman LR, Caves K, Koh GC, Hoenig H. Teleassessment of Gait and Gait Aids: Validity and Interrater Reliability. Phys Ther. 04 17 2020;100(4):708-717. doi:10.1093/ptj/pzaa005

4. Russell TG, Hoffmann TC, Nelson M, Thompson L, Vincent A. Internet-based physical assessment of people with Parkinson disease is accurate and reliable: a pilot study. J Rehabil Res Dev. 2013;50(5):643-50. doi:10.1682/jrrd.2012.08.0148

5. Hoffmann T, Russell T, Thompson L, Vincent A, Nelson M. Using the Internet to assess activities of daily living and hand function in people with Parkinson's disease. NeuroRehabilitation. 2008;23(3):253-61.

6. Cabrera-Martos I, Ortiz-Rubio A, Torres-Sánchez I, López-López L, Rodríguez-Torres J, Carmen Valenza M. Agreement Between Face-to-Face and Tele-assessment of Upper Limb Functioning in Patients with Parkinson Disease. PM R. 06 2019;11(6):590-596. doi:10.1002/pmrj.12001

7. Stillerova T, Liddle J, Gustafsson L, Lamont R, Silburn P. Remotely Assessing Symptoms of Parkinson's Disease Using Videoconferencing: A Feasibility Study. Neurol Res Int. 2016;2016:4802570. doi:10.1155/2016/4802570

8. Duncan RP, Leddy AL, Earhart GM. Five times sit-to-stand test performance in Parkinson's disease. Arch Phys Med Rehabil. Sep 2011;92(9):1431-6. doi:10.1016/j.apmr.2011.04.008

9. Muñoz-Bermejo L, Adsuar JC, Mendoza-Muñoz M, et al. Test-Retest Reliability of Five Times Sit to Stand Test (FTSST) in Adults: A Systematic Review and Meta-Analysis. Biology (Basel). Jun 09 2021;10(6)doi:10.3390/biology10060510

10. Domingos JMM, Capato TTC, Almeida LRS, et al. The European Physiotherapy Guideline for Parkinson's Disease: translation for non-English speaking countries. J Neurol. Jan 2021;268(1):214-218. doi:10.1007/s00415-020-10132-x

11. Doraiswamy S, Abraham A, Mamtani R, Cheema S. Use of Telehealth During the COVID-19 Pandemic: Scoping Review. J Med Internet Res. 12 01 2020;22(12):e24087. doi:10.2196/24087

12. von Elm E, Altman DG, Egger M, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. Int J Surg. Dec 2014;12(12):1495-9. doi:10.1016/j.ijsu.2014.07.013

13. Jankovic J. Parkinson's disease: clinical features and diagnosis. J Neurol Neurosurg Psychiatry. Apr 2008;79(4):368-76. doi:10.1136/jnnp.2007.131045

14. Almeida OP. [Mini mental state examination and the diagnosis of dementia in Brazil]. Arq Neuropsiquiatr. Sep 1998;56(3B):605-12. doi:10.1590/s0004-282x1998000400014

15. Baggio JA, Curtarelli MB, Rodrigues GR, Tumas V. Validity of the Brazilian version of the freezing of gait questionnaire. Arq Neuropsiquiatr. Aug 2012;70(8):599-603. doi:10.1590/s0004-282x2012000800008

16. Castanho TC, Amorim L, Zihl J, Palha JA, Sousa N, Santos NC. Telephone-based screening tools for mild cognitive impairment and dementia in aging studies: a review of validated instruments. Front Aging Neurosci. 2014;6:16. doi:10.3389/fnagi.2014.00016

17. Lai B, Chiu CY, Pounds E, et al. COVID-19 Modifications for Remote Teleassessment and Teletraining of a Complementary Alternative Medicine Intervention for People With Multiple Sclerosis: Protocol for a Randomized Controlled Trial. JMIR Res Protoc. Jul 2020;9(7):e18415. doi:10.2196/18415

18. Finkelstein J, Lapshin O, Castro H, Cha E, Provance PG. Home-based physical telerehabilitation in patients with multiple sclerosis: a pilot study. J Rehabil Res Dev. 2008;45(9):1361-73.

19. Paul L, Coulter EH, Miller L, McFadyen A, Dorfman J, Mattison PG. Web-based physiotherapy for people moderately affected with Multiple Sclerosis; quantitative and qualitative data from a randomized, controlled pilot study. Clin Rehabil. Sep 2014;28(9):924-35. doi:10.1177/0269215514527995

20. Øra HP, Kirmess M, Brady MC, Sørli H, Becker F. Technical Features, Feasibility, and Acceptability of Augmented Telerehabilitation in Post-stroke Aphasia-Experiences From a Randomized Controlled Trial. Front Neurol. 2020;11:671. doi:10.3389/fneur.2020.00671

21. Portney L, Watkins M. Foundations of clinical research: applications to practice. 3th edition ed. New Jersey: Prentice Hall2009.

22. Koo TK, Li MY. A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. J Chiropr Med. Jun 2016;15(2):155-63. doi:10.1016/j.jcm.2016.02.012

23. Bland JM, Altman DG. Statistical methods for assessing agreement between two methods of clinical measurement. Lancet. Feb 08 1986;1(8476):307-10.

24. Buatois S, Miljkovic D, Manckoundia P, et al. Five times sit to stand test is a predictor of recurrent falls in healthy community-living subjects aged 65 and older. J Am Geriatr Soc. Aug 2008;56(8):1575-7. doi:10.1111/j.1532-5415.2008.01777.x

25. Bird ML, Peel F, Schmidt M, et al. Mobility-Focused Physical Outcome Measures Over Telecommunication Technology (Zoom): Intra and Interrater Reliability Trial. JMIR Rehabil Assist Technol. Aug 22 2022;9(3):e38101. doi:10.2196/38101

26. Lee PH, Macfarlane DJ, Lam TH, Stewart SM. Validity of the International Physical Activity Questionnaire Short Form (IPAQ-SF): a systematic review. *Int J Behav Nutr Phys Act*. Oct 21 2011;8:115. doi:10.1186/1479-5868-8-115

27. Tomlinson CL, Stowe R, Patel S, Rick C, Gray R, Clarke CE. Systematic review of levodopa dose equivalency reporting in Parkinson's disease. *Mov Disord*. Nov 15 2010;25(15):2649-53. doi:10.1002/mds.23429

4 CONCLUSÃO GERAL

O presente trabalho demonstrou que uma avaliação online funcional é viável e segura em adultos mais velhos com e sem doença de Parkinson. A avaliação se deu a partir de uma tarefa de transferência funcional, conhecida como Teste de Levantar e Sentar Cinco Vezes. Ademais, encontramos uma excelente confiabilidade intra e inter-examinador para a realização deste teste.

Apesar das barreiras tecnológicas presentes na realização de atividades remotas, como dificuldades no uso de dispositivos eletrônicos pela população incluída e atrasos da conexão com a internet, apoiamos a realização da teleavaliação utilizando uma avaliação física na população de adultos mais velhos com e sem DP quando não for possível a forma presencial. Incentivamos o uso da *guideline* OMPEPE, que se mostrou valiosa para guiar os profissionais em cada etapa envolvida na avaliação, auxiliando no entendimento e na preparação do paciente e na padronização das orientações pelo avaliador.

Com o aumento da longevidade e, assim, o aumento das doenças relacionadas à idade, o amplo acesso à saúde deve contar com soluções para quem reside distante, possui problemas relacionados ao deslocamento ou está em situação que exige o isolamento social. A telessaúde é uma alternativa quando o formato presencial não é possível. Para avaliar a monitorar essa população, teleavaliações em tempo real devem se estabelecer como uma prática comum no cotidiano dos profissionais. Ainda que apresentem alguns desafios a serem superados, como a qualidade da conexão com internet.

Pesquisas futuras devem verificar a validade da realização de testes físicos e funcionais, como o Teste de Levantar e Sentar Cinco Vezes, de forma online, em diferentes populações com doenças neurológicas, como a doença de Parkinson. Também sugerimos que sejam realizados estudos que comparem a avaliação remota com e sem o uso do *guideline* OMPEPE, para definir suas vantagens na condução de uma avaliação. Mais estudos nessa área com um maior número de amostra e comparação do custo-benefício envolvido na avaliação online com essas populações são importantes para respaldar a sua prática.

5 IMPACTOS DO TRABALHO

O presente trabalho poderá apoiar pesquisadores e profissionais da saúde quanto a viabilidade e segurança da realização de uma avaliação online utilizando o Teste de Sentar e Levantar Cinco Vezes (TSLCV) com a população de adultos mais velhos e idosos, com e sem doença de Parkinson. Realizamos algumas ações para diminuir as barreiras (como a realização de um tutorial prévio e auxílio para acessar as chamadas), porém mesmo assim identificamos algumas barreiras relacionadas à tecnologia. Com as barreiras encontradas e descritas nesse estudo, em futuros trabalhos os avaliadores poderão criar novas soluções que as contornem ou minimizem (como o uso de acesso remoto das telas, o treinamento de familiares/cuidadores, entre outras).

Demonstramos que o TSLCV possui uma excelente confiabilidade intra e inter-examinador, além de não possuir diferença significativa na escolha entre a tentativa mais rápida ou a média das tentativas da performance do teste. Assim, os avaliadores poderão optar pelo método que for mais conveniente, quando avaliar esse grupo, desde que de forma padronizada como foi em nosso estudo.

O uso da *guideline* desenvolvida chamada OMPEPE mostrou-se valiosa para conduzir o presente trabalho e acreditamos que poderá auxiliar clínicos e pesquisadores a conduzirem uma avaliação a distância de uma forma organizada, padronizando as instruções dadas e auxiliando no entendimento e preparação passo-a-passo por parte de quem será avaliado.

O desenvolvimento e aprimoramento de práticas em telessaúde poderão quebrar as barreiras físicas, como a distância, as dificuldades e custos de deslocamentos ou as situações que impossibilitem temporariamente o contato social. Essa alternativa de entrega de serviços em saúde, poderá trazer impactos positivos a nível socioeconômico, com redução de custos e amplo acesso a todos que tenham um dispositivo conectado a internet. Diante do avanço tecnológico, é importante a preparação dos profissionais para esse cenário cada vez mais presente.

6 REFERÊNCIAS DA CONTEXTUALIZAÇÃO

1. Doraiswamy S, Abraham A, Mamtani R, Cheema S. Use of Telehealth During the COVID-19 Pandemic: Scoping Review. J Med Internet Res. 12 01 2020;22(12):e24087. doi:10.2196/24087
2. Shigekawa E, Fix M, Corbett G, Roby DH, Coffman J. The Current State Of Telehealth Evidence: A Rapid Review. Health Aff (Millwood). 12 2018;37(12):1975-1982. doi:10.1377/hlthaff.2018.05132
3. Hoogendijk EO, Afilalo J, Ensrud KE, Kowal P, Onder G, Fried LP. Frailty: implications for clinical practice and public health. Lancet. 10 12 2019;394(10206):1365-1375. doi:10.1016/S0140-6736(19)31786-6
4. Cruz-Jimenez M. Normal Changes in Gait and Mobility Problems in the Elderly. Phys Med Rehabil Clin N Am. 11 2017;28(4):713-725. doi:10.1016/j.pmr.2017.06.005
5. Prince MJ, Wu F, Guo Y, et al. The burden of disease in older people and implications for health policy and practice. Lancet. Feb 07 2015;385(9967):549-62. doi:10.1016/S0140-6736(14)61347-7
6. Oh-Park M, Lew HL, Raghavan P. Telerehabilitation for Geriatrics. Phys Med Rehabil Clin N Am. 05 2021;32(2):291-305. doi:10.1016/j.pmr.2021.01.003
7. Bloem BR, Okun MS, Klein C. Parkinson's disease. Lancet. 06 12 2021;397(10291):2284-2303. doi:10.1016/S0140-6736(21)00218-X
8. Pringsheim T, Jette N, Frolkis A, Steeves TD. The prevalence of Parkinson's disease: a systematic review and meta-analysis. Mov Disord. Nov 2014;29(13):1583-90. doi:10.1002/mds.25945
9. Goetz CG, Poewe W, Rascol O, et al. Movement Disorder Society Task Force report on the Hoehn and Yahr staging scale: status and recommendations. Mov Disord. Sep 2004;19(9):1020-8. doi:10.1002/mds.20213
10. Collaborators GPsD. Global, regional, and national burden of Parkinson's disease, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Neurol. 11 2018;17(11):939-953. doi:10.1016/S1474-4422(18)30295-3
11. Dorsey ER, Bloem BR. The Parkinson Pandemic-A Call to Action. JAMA Neurol. 01 01 2018;75(1):9-10. doi:10.1001/jamaneurol.2017.3299

12. Domingos JMM, Capato TTC, Almeida LRS, et al. The European Physiotherapy Guideline for Parkinson's Disease: translation for non-English speaking countries. J Neurol. Jan 2021;268(1):214-218. doi:10.1007/s00415-020-10132-x

13. Muñoz-Bermejo L, Adsuar JC, Mendoza-Muñoz M, et al. Test-Retest Reliability of Five Times Sit to Stand Test (FTSST) in Adults: A Systematic Review and Meta-Analysis. Biology (Basel). Jun 09 2021;10(6)doi:10.3390/biology10060510

14. Lusardi MM, Fritz S, Middleton A, et al. Determining Risk of Falls in Community Dwelling Older Adults: A Systematic Review and Meta-analysis Using Posttest Probability. J Geriatr Phys Ther. 2017 Jan/Mar 2017;40(1):1-36. doi:10.1519/JPT.0000000000000099

15. Duncan RP, Leddy AL, Earhart GM. Five times sit-to-stand test performance in Parkinson's disease. Arch Phys Med Rehabil. Sep 2011;92(9):1431-6. doi:10.1016/j.apmr.2011.04.008

16. Chirra M, Marsili L, Wattley L, et al. Telemedicine in Neurological Disorders: Opportunities and Challenges. Telemed J E Health. 07 2019;25(7):541-550. doi:10.1089/tmj.2018.0101

17. Sabo K, Chin E. Self-care needs and practices for the older adult caregiver: An integrative review. Geriatr Nurs. 2021;42(2):570-581. doi:10.1016/j.gerinurse.2020.10.013

18. Cottrell MA, O'Leary SP, Swete-Kelly P, et al. Agreement between telehealth and in-person assessment of patients with chronic musculoskeletal conditions presenting to an advanced-practice physiotherapy screening clinic. Musculoskelet Sci Pract. 12 2018;38:99-105. doi:10.1016/j.msksp.2018.09.014

19. Richardson BR, Truter P, Blumke R, Russell TG. Physiotherapy assessment and diagnosis of musculoskeletal disorders of the knee via telerehabilitation. J Telemed Telecare. Jan 2017;23(1):88-95. doi:10.1177/1357633X15627237

20. Bird ML, Peel F, Schmidt M, et al. Mobility-Focused Physical Outcome Measures Over Telecommunication Technology (Zoom): Intra and Interrater Reliability Trial. JMIR Rehabil Assist Technol. Aug 22 2022;9(3):e38101. doi:10.2196/38101

21. Venkataraman K, Amis K, Landerman LR, Caves K, Koh GC, Hoenig H. Teleassessment of Gait and Gait Aids: Validity and Interrater Reliability. Phys Ther. 04 17 2020;100(4):708-717. doi:10.1093/ptj/pzaa005

22. Russell TG, Hoffmann TC, Nelson M, Thompson L, Vincent A. Internet-based physical assessment of people with Parkinson disease is accurate and reliable: a pilot study. J Rehabil Res Dev. 2013;50(5):643-50. doi:10.1682/jrrd.2012.08.0148

23. Hoffmann T, Russell T, Thompson L, Vincent A, Nelson M. Using the Internet to assess activities of daily living and hand function in people with Parkinson's disease. NeuroRehabilitation. 2008;23(3):253-61.

24. Cabrera-Martos I, Ortiz-Rubio A, Torres-Sánchez I, López-López L, Rodríguez-Torres J, Carmen Valenza M. Agreement Between Face-to-Face and Tele-assessment of Upper Limb Functioning in Patients with Parkinson Disease. PM R. 06 2019;11(6):590-596. doi:10.1002/pmrj.12001

25. Stillerova T, Liddle J, Gustafsson L, Lamont R, Silburn P. Remotely Assessing Symptoms of Parkinson's Disease Using Videoconferencing: A Feasibility Study. Neurol Res Int. 2016;2016:4802570. doi:10.1155/2016/4802570

26. Gandolfi M, Geroin C, Dimitrova E, et al. Virtual Reality Telerehabilitation for Postural Instability in Parkinson's Disease: A Multicenter, Single-Blind, Randomized, Controlled Trial. Biomed Res Int. 2017;2017:7962826. doi:10.1155/2017/7962826

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: APRENDIZADO MOTOR E TELEREABILITAÇÃO UTILIZANDO UMA INTERVENÇÃO COM DANÇA EM PESSOAS COM DOENÇA DE PARKINSON

Pesquisador: ALINE DE SOUZA PAGNUSSAT

Área Temática:

Versão: 2

CAAE: 31976320.9.0000.5345

Instituição Proponente: Universidade Federal de Ciências da Saúde de Porto Alegre

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 4.165.923

Apresentação do Projeto:

O exercício físico tem sido fortemente recomendado para melhorar os sintomas de pessoas com Doença de Parkinson (DP), especialmente aqueles que envolvem a socialização. A dança é um método de exercício físico em grupo que traz benefícios físicos e cognitivos, além de reduzir os níveis de ansiedade e depressão. Dessa forma, o presente estudo será dividido em três etapas, cujos objetivos são: 1) verificar a efetividade,viabilidade e segurança de uma intervenção com dança orientada via telereabilitação (orientada à distância)em indivíduos com DP; 2) investigar os efeitos de uma intervenção com dança orientada via telereabilitação

(à distância) comparada com a mesma intervenção de forma presencial em indivíduos com DP; 3) investigar dois métodos de instrução verbal para aprendizado motor utilizando uma intervenção com dança presencial em pessoas com DP. A intervenção com dança terá duração de 60 minutos e será realizada duas vezes por semana durante 8 semanas, para a etapa 1, e durante 12 semanas, para as etapas 2 e 3. Na primeira etapa, trata-se de um estudo clínico de viabilidade no qual indivíduos com DP e indivíduos controles saudáveis serão recrutados e ambos receberão uma intervenção com aulas de dança utilizando a plataforma Zoom. Desfechos como viabilidade, efetividade e segurança serão avaliados por meio de questionários, controle dos efeitos adversos e aderência ao programa após o término do protocolo. Na segunda etapa, um ensaio clínico randomizado será realizado e indivíduos com DP

Endereço: Rua Sarmento Leite ,245
Bairro: Sarmento **CEP:** 90.050-170
UF: RS **Município:** PORTO ALEGRE
Telefone: (51)3303-8804 **E-mail:** cep@ufcspa.edu.br

serão alocados em dois
grupos: a) experimental: receberá intervenção com dança à distância (via telereabilitação) e b) controle: receberá intervenção com dança presencialmente. O desfecho principal será qualidade de vida (PDQ-8) e os desfechos secundários serão: resistência de membros inferiores (teste de senta e levanta de 30 segundos), confiança para realizar as atividades de vida diária (ABC) e sintomas não-motores relacionados às atividades diárias (UPDRS I). As avaliações irão acontecer em dois momentos distintos: PRÉ (antes da intervenção) e PÓS (imediatamente após o término da intervenção). De forma geral, esperase que a dança em grupo promova melhora significativa nos sintomas motores e não-motores da DP, além de ser uma atividade física segura para ser implementada via telereabilitação. Além disso, espera-se que a
instrução de linguagem que reforce as expectativas, aumente a autonomia e direcione o foco externo para construir os movimentos seja mais efetiva para a aprendizagem motora de pessoas com DP sem experiência prévia com dança.

Objetivo da Pesquisa:
Levando em consideração a população com DP, esse projeto visa: (1) Investigar a viabilidade e segurança de uma intervenção com dança remota (telereabilitação); (2) Comparar os efeitos da intervenção com dança remota (telereabilitação) versus
intervenção presencial na melhora na
qualidade de vida e nos sintomas não motores da DP; (3) Comparar os efeitos de duas estratégias de instrução de linguagem verbal (foco externo, aumento das expectativas e autonomia versus foco interno) na atividade e conectividade encefálica e no aprendizado motor em uma intervenção
com dança na modalidade presencial.

Avaliação dos Riscos e Benefícios:
Riscos
Não estão previstos danos aos participantes da pesquisa, mas em caso de danos diretamente causados por procedimentos da pesquisa, será garantido o tratamento médico com as medicações necessárias ou tratamento físico com o fisioterapeuta.
Benefícios:
Os indivíduos poderão perceber possíveis benefícios decorrentes deste tratamento que poderão ajudar nos seus sintomas da Doença de Parkinson, como melhora dos seus movimentos do corpo e disposição para realizar suas atividades de vida diária.

Comentários e Considerações sobre a Pesquisa:

A pesquisa está bem fundamentada e com metodologia bem descrita, a população alvo do estudo está bem delimitada e definida.

Considerações sobre os Termos de apresentação obrigatória:

Todos os termos obrigatórios foram submetidos e aceitos.

Recomendações:

Iniciar coleta de dados somente após a aprovação do projeto junto ao CEP.

Conclusões ou Pendências e Lista de Inadequações:

O projeto está adequado para ser desenvolvido,tendo seu término previsto para 03/2023.

Considerações Finais a critério do CEP:

De acordo com o parecer do Relator.

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1548591.pdf	30/06/2020 22:45:54		Aceito
Parecer Anterior	Carta_resposta_ao_CEP.pdf	30/06/2020 22:44:05	ALINE DE SOUZA PAGNUSSAT	Aceito
Outros	Apendice4TERMOIMAGEM.doc	30/06/2020 22:43:14	ALINE DE SOUZA PAGNUSSAT	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	Apendice3TCLE_Projeto3.docx	30/06/2020 22:42:44	ALINE DE SOUZA PAGNUSSAT	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	Apendice2TCLE_Projeto2.docx	30/06/2020 22:42:34	ALINE DE SOUZA PAGNUSSAT	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	Apendice1TCLEs_Projeto1.docx	30/06/2020 22:42:22	ALINE DE SOUZA PAGNUSSAT	Aceito
Projeto Detalhado / Brochura Investigador	Projeto.docx	30/06/2020 22:41:44	ALINE DE SOUZA PAGNUSSAT	Aceito
Outros	termoanuenciaresponsavellocalpesquisa.pdf	30/06/2020 22:41:31	ALINE DE SOUZA PAGNUSSAT	Aceito
Orçamento	orcamento.pdf	30/06/2020	ALINE DE SOUZA	Aceito

Orçamento	orcamento.pdf	22:40:14	PAGNUSSAT	Aceito
Folha de Rosto	folhaderosto.pdf	03/05/2020 18:23:15	ALINE DE SOUZA PAGNUSSAT	Aceito
Cronograma	cronograma.pdf	03/05/2020 18:11:41	ALINE DE SOUZA PAGNUSSAT	Aceito
Outros	termocompromissorelatoriofinal.pdf	30/04/2020 20:44:58	ALINE DE SOUZA PAGNUSSAT	Aceito

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

PORTO ALEGRE, 21 de Julho de 2020

Assinado por:
Fernanda Bordignon Nunes
(Coordenador(a))