**Title of article**: The implementation of effective non-pharmacological interventions of the People Getting a Grip educational program for individuals with rheumatoid arthritis through Internet-based delivery methods: An International Online Knowledge Translation Randomized Controlled Trial Design Protocol

Table 1. Items included in the Template for Intervention Description and Replication (TIDieR) checklist: information to include when describing an intervention.

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| **Item No** | **Item** |
| **Brief name** | Provide the name or a phrase that describes the intervention:  |
| 1 | Knowledge Translation randomized controlled trial using a Prospective Randomized Open-label Blinded-Endpoint (PROBE) designInternet based, the effectiveness of information communication technologies as knowledge translation strategies promoting self-management of rheumatoid arthritis, the effectiveness of PGrip-RA program on clinical outcomes |
| **Why** | Describe any rationale, theory, or goal of the elements essential to the intervention |
| 2 | Information communication technologies (ICT), such as the Internet, are increasingly being explored as useful tools for disseminating self-management programs. The use of social media (Facebook) as an ICT and online knowledge translation (KT) strategy may effectively improve health behaviour change outcomes for rheumatoid arthritis (RA). People Getting a Grip on Arthritis (PGrip) is a self-management evidence-based educational program that will provide updated material through Facebook and email platforms.Knowledge Translation: Knowledge translation for this protocol is guided by the milestones outlined in the Knowledge-to-Action Cycle (Straus et al., 2013), in order to determine if ICTs can serve as a useful and economical method for KT. Other theory-based influences on knowledge translation include the Diffusion of Innovation Model (DIM) (Rogers, 1995) and the Technology Acceptance model (TAM) (Davis et al., 1989)Facebook: This social media platform will be used to disseminate URL links of the PGrip-RA program and provide access to health professional feedback for designated intervention groups. Information Communication Technologies (ICT): Methods used for delivering or enhancing online services or information through the Internet. ICTs have a strong potential for positive implications on the rheumatoid arthritis self-management techniques (Brosseau et al., 2014a)PGrip-RA: “People Getting a Grip on Arthritis (PGrip) is an evidence-based educational program (People getting a grip on arthritis – videos, 2009) that is based on the Ottawa Panel guidelines (Brosseau et al., 2004a; Brosseau et al., 2004b; Brosseau et al., 2012a). It serves to provide education on numerous effective non-pharmacological self-management interventions for arthritis, to improve health behavioural changes such as self-efficacy (Lorig et al., 2008)” |
| **What** | Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (such as online appendix, URL) |
| 3 | Facebook Group Page and PGrip-RA Online Program:Participants in Group E are given access to the Facebook group page which will present the PGrip-RA Online program. More information and precise details on the PGrip-RA Online program can be found at <http://hej.sagepub.com/content/73/1/109>. On the Facebook group participants can access video presentations of various effective RA self-management intervention strategies based on the Ottawa Panel guidelines (Brosseau et al., 2004a; Brosseau et al., 2004b; Brosseau et al., 2012a). “Similar to the PGrip pilot study (Brosseau et al., 2014a; PGrip: community page about arthritis, n.d.), video presentations will include narrated PowerPoint presentations with simplified, concise instructions on how to perform/apply each self-management intervention and case studies illustrating their appropriateness and relevance. In addition, video presentations of practical sessions including a health professional describing step-by-step instructions while performing the evidence-based intervention will also be posted on each Facebook group page. Participants will have the opportunity to share their unique perspective on living with arthritis and how they plan to integrate the effective self-management interventions into their daily lives by posting comments on the “wall” of the Facebook group page.” The Arthritis Society (TAS) Educational PamphletsParticipants will also be provided with TAS educational pamphlets on self-management interventions for RA (general information) by posting URL links for each on the Facebook page. The two educational pamphlets will include: 1) Rheumatoid Arthritis: Know your options (archived at <http://www.webcitation.org/6PNJvLdig>) and 2) Physical Activity & Arthritis (archived at <http://www.webcitation.org/6PNKoYcT8>).”Self-Management Online ModulesThree separate self-management online modules are provided to participants for completion, each over a 2 week period, for a total of 6 weeks. These online modules focus on: 1) physical activity interventions, 2) wrist orthotics and foot insoles massage interventions, and 3) Transcutaneous Electrical Nerve Stimulation (TENS) interventions. *Physical Activity Interventions:** Low Intensity Exercises will include a series of leg exercises (mini squats, heel raises, side leg raise, step-ups) and arm exercises (shoulder shrugs, shoulder press, arm curls). Participants are given an exercise program with instructions on how to perform each leg and arm exercise. The video presentation of low intensity exercises can be found at <http://www.youtube.com/watch?feature=player_embedded&v=V26IkdNlOAc>. The video showcasing leg and arm exercises can be found at <https://www.youtube.com/watch?feature=player_embedded&v=nKpEnOmGiLY>
* Tai Chi steps include 15-20 minutes of warm-up exercise, 12 basic movements, and a series of movements producing a continuous rhythmic motion with emphasis on relaxation. Additional instructions on how to perform the 12 basic movements of Tai Chi are provided to participants in the “Tai Chi Forms” package. The video presentation of Tai Chi steps can be found at <http://www.youtube.com/watch?v=7ke1Ab7lu1o&feature=player_embedded>. The video showcasing the 12 basic movements of Tai Chi can be found at <https://www.youtube.com/watch?feature=player_embedded&v=LfgQZicwMuA>
* Yoga is comprised of both positions and progressions, and controlled breathing. Additional instructions on how to perform yoga positions are provided to participants in the “Yoga Movements” Booklet. The video presentation of Yoga can be found at <http://www.youtube.com/watch?v=-1KmNiRzU7c>. The video showcasing the various yoga positions can be found at <https://www.youtube.com/watch?v=Gfm4Auj6PaA>
* Aquatic jogging is a strengthening exercise that reduces the impact on knees, hips, and ankles. Additional instructions on the aerobic activities performed during aquatic jogging are found in the video presentation at <http://www.youtube.com/watch?v=meOzjOCzngs>. The video showcasing the aerobic activities can be found at <https://www.youtube.com/watch?v=QQxp7WtqGIw>

*Wrist Orthotics and Foot Insoles Massage Interventions:** Participants view a video presentation on rheumatoid arthritis implications of using wrist orthoses as well as how to wear, select and when to wear a wrist orthose. The video presentation can be found at <https://www.youtube.com/watch?v=Zhid8xGbyYo>
* Participants view a video presentation on the rheumatoid arthritis implications of using foot insoles as well as how to wear, select and required daily duration of wearing a foot insole. The video presentation can be found at <https://www.youtube.com/watch?feature=player_embedded&v=ObQUsIZuA7M>

*Transcutaneous Electrical Nerve Stimulation (TENS) interventions** TENS is used to relieve pain by electrically creating vibrations on the skin. Additional information on how the TENS unit can be used to relieve RA pain is provided in the video presentation found at <https://www.youtube.com/watch?v=xwQGHhZqNe0>. The video showcasing how to apply TENS can be found at <https://www.youtube.com/watch?v=rgGB6Pzmues>

The Arthritis Society (TAS) PGrip-RA WebsiteLinks to the TAS PGrip-RA Website (<http://www.arthritis.ca/peoplegettingagrip>) will be sent to participants in Groups C and D will contain the same educational information that will be provided in the Facebook groups. PGrip-RA WorkbookEmail attachments of a workbook with the content of the online PGrip-RA program in a Portable Document Format (PDF) document will be sent to participants in Group B. Training of Intervention Providers Training on the Ottawa Panel Guidelines, evidence-based practice, the selected self-management interventions, PGrip-RA material using PowerPoint presentations and videos, and frequently asked questions from the pilot study will be provided. For more details regarding training materials please see <http://www.arthritis.ca/peoplegettingagrip> |
| 4 | Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities |
| Self-Management Online Modules:“One physiotherapist and one kinesiologist will be responsible for the physical activity module. An occupational therapist will cover the module with wrist orthotics and foot insoles. The same physiotherapist will also cover the transcutaneous electrical nerve stimulation (TENS) module. During each 2 week intervention module the respective health professional(s) will monitor the Facebook page on three separate days (Monday, Wednesday, and Friday for 4 hours each day), review all of the participants’ written comments and provide feedback (for details see Figure 2 in protocol which is currently under peer review).”*Physical Activity Interventions:* * For the Low Intensity Low Body Strengthening Program participants will complete 2 sets of 12 repetitions of leg and arm exercises 3 times a week (non-consecutive days). The exercise order begins with one set of exercises for all zones (arms then legs, etc.), a second set of exercises for all zones, and if applicable, ends with a third set. As the participant progresses from the beginner program (low intensity) to the intermediate program (moderate intensity), 3 sets of 15 repetitions of leg and arm exercises are required. One minute of rest between sets should be taken. Participants may progress to a higher intensity when little to no effort is required to complete the exercise and without an increase of current level of pain.
* Participants will perform Tai Chi daily for 20 minutes and, if possible, will attend an instructor led 1 hour group session once or twice each week.
* Participants will perform Yoga daily for 30 minutes at home and attend a 1 hour group session per week. All sessions must begin with a warm up, stretching and rotation of joints. A complete list of yoga positions outlined for participants to complete is included in the video presentation and “Yoga Movements” Booklet.
* Participants will perform aquatic jogging for 3 times a week for 60 minutes. Warm up and stretching exercises will take place at the beginning of the exercise session for up to 10 - 25 minutes and at the end for 15 minutes. At the beginning of the exercise session, aquatic jogging should last 15 minutes and increase to 30 min as more sessions are completed. Participants need to obtain 70 percent maximum heart rate (MHR) while performing aquatic exercise. Participants will check their pulse after about 5 minutes of walking or jogging in order to determine if 70 percent MHR is obtained.

*Wrist Orthotics and Foot Insoles Massage Interventions:** Participants are instructed to wear wrist orthoses as much as possible and insoles for a minimum of 6.5 hours daily. Further details on how to use wrist orthoses and insoles are provided during the video presentations.

*Transcutaneous Electrical Nerve Stimulation (TENS) intervention:** Participants will use a single channel portable TENS unit at a frequency of 70 Hz (continuous mode) and pulse width of 200 µs. Electrodes are placed on the participants wrist and the settings of the TENS unit are prepared. TENS should be performed once a week for 15 minutes. In order to compensate for body adaptation to low intensity electrodes, the intensity of electrode delivery may be increased. Additional information on the TENS unit is provided during the practical session delivered to participants.

“Health professionals involved in Group E will assist participants in Group E set goals for self-management interventions offered in PGrip-RA. Goal setting will not be required for the participants in the four other groups. However, study participants in all groups will record their physical activities and participation in PGrip interventions using the 7-Day PAR calendar”  |
| **Who provided** | For each category of intervention provider (such as psychologist, nursing assistant), describe their expertise, background, and any specific training given |
| 5 | Physiotherapist: The physiotherapist (along with the kinesiologist) will be responsible for the physical activity module and the Transcutaneous Electrical Nerve Stimulation (TENS) module, each for the duration of 2 weeks. The same physiotherapist will be involved in the moderation of the physical activity and TENS modules. Kinesiologist: The kinesiologist (along with the physiotherapist) will be responsible for the physical activity module for the duration of 2 weeks. Occupational therapist: The occupational therapist will be responsible for the wrist orthotics and foot insoles module for the duration of 2 weeks. Three health professionals with expertise in arthritis and a professional degree in physiotherapy, occupational therapy, and kinesiology respectively, will be recruited through Arthritis Health Profession Association. Recruited health professionals will participate in one half day training workshop delivered by the methodologists of Ottawa Panel Guidelines and the creators of PGrip-RA, on the Ottawa Panel Guidelines, evidence-based practice, the selected self-management interventions, PGrip-RA material using PowerPoint presentations and videos, and frequently asked questions from the pilot study.  |
| **How** | Describe the modes of delivery (such as face to face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group |
| 6 | “There will be five study groups (see Figure 2 in the protocol) in the proposed complex RCT. The PGrip evidence-based self-management educational program intervention will be provided online (via e-mail or Facebook) for 6 weeks.” “Participants will be randomly assigned to one of the two Facebook intervention groups (Groups E and D), the PGrip-RA only groups (Groups C and B), or the control group (Group A) based on a sequence of computer generated random numbers using a blocking factor (randomly varying between 4 and 6).” It is projected that a minimum of 200 participants will be recruited, thus approximately 40 participants will be assigned per group. Three trained health professionals, representing three professions (physiotherapy, occupational therapy, and kinesiology) will read the comments and questions participants write to each other on the “wall” and will give feedback to the participants on a weekly basis.  |
| **Where** | Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features |
| 7 | All aspects of the intervention are delivered online therefore it may be accessed in any location where Internet is available. PGrip-RA intervention modules, PGrip-RA Workbook, and TAS e-pamphlets are made accessible to study participants either through Facebook, a website, or email, according to their assigned study group. “Online recruitment of approximately 200 people with RA from arthritis consumer associations across Australia and Canada. Recruitment methods include an advertisement on the Facebook page of the TAS, arthritis patient associations’ electronic newsletter websites and other health-related websites.” |
| **When and How Much** | Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity, or dose |
| 8 | The three separate self-management online modules described in section 3 of the TIDieR checklist are provided to participants for completion, each over a 2 week period, for a total of 6 weeks. Participants will have access to the online material after the completion of the baseline questionnaires up until the final follow-up questionnaire at 6 months. During each 2 week module the respective health professional(s) will monitor the Facebook page (Group E only) on three separate days (Monday, Wednesday, and Friday for 4 hours each day), review all of the participants’ written comments and provide feedback. For further information on the number of sessions, schedule, duration and intensity of the activities performed during the self-management online modules, please refer to section 4 of the TIDieR checklist.  |
| **Tailoring** | If the intervention was planned to be personalized, titrated or adapted, then describe what, why, when, and how |
| 9 | Participants in each group receive the same access to online materials according to their designated intervention. During the self-management online modules participants can modify the duration and intensity of exercises performed, use of insoles and wrist orthoses, and Transcutaneous Electrical Nerve Stimulation (TENS), within the boundaries outlined in the video presentations. For example, a participant’s body may become accustomed to low electrode intensities during TENS, therefore it is permitted that the participant increase the intensity to ensure beneficial effects.  |
| **Modifications** | If the intervention was modified during the course of the study, describe the changes (what, why, when, and how) |
| 10\* | **Not applicable for a protocol** |
| **How well** | Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them |
| 11 | The three recruited health professionals will participate in one half day training workshop delivered by the methodologists of Ottawa Panel Guidelines and the creators of PGrip-RA, on the Ottawa Panel Guidelines, evidence-based practice, the selected self-management interventions, PGrip-RA material using PowerPoint presentations and videos, and frequently asked questions from the pilot study.Health professionals involved in Group E will assist participants in Group E set goals for self-management interventions offered in PGrip-RA. Goal setting will not be required for the participants in the four other groups. However, study participants in all groups will record their physical activities and participation in PGrip interventions using the 7-Day PAR calendar (Sallis et al., 1985). Goal attainment and intervention adherence will be measured by comparing individual records with what is recommended for each intervention in the PGrip program. Goal attainment and intervention adherence will be measured by comparing individual records with what is recommended for each intervention in the PGrip program. Intervention adherence will be measured at baseline and each week after the start of the study and is guided by the Diffusion of Innovation Model (DIM) (Rogers 1995) and the Hypothesized Model of Effects of Self-Efficacy Enhancing Interventions for People with Chronic Diseases (HMESE) (Marks & Allegante, 2005).PGrip-RA program adherence will be measured with the actual use questionnaire (Brosseau et al., 2014a) and also by calculating the proportion of the number of intervention sessions performed divided by the number of sessions prescribed (eg, walking program 3 times a week as recommended in the Ottawa Panel guidelines (Brosseau et al., 2004a; Brosseau et al., 2004b) and recorded in the participants’ online logbooks.In hopes of maintaining PGrip-RA program adherence for participants in Group E, reminders and assistance from designated health professionals to set goals and complete logbooks will be sent. Periodic questionnaires to serve as reminders to continue with the intervention will also be delivered to participants in Group E.  |
| 12\* | Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned |
| **Not applicable for a protocol** |

\*If checklist is completed for a protocol, these items are not relevant to protocol and cannot be described until study is complete.

Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., . . . Michie, S. (2014). Better reporting of interventions: Template for intervention description and replication (TIDieR) checklist and guide. *BMJ (Clinical Research Ed.), 348*, g1687. doi:10.1136/bmj.g1687