

# Development of a low resource exercise rehabilitation application for musculoskeletal disorders to help underserved patients in a primary care setting

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*Objective: We set out to create a Family Medicine EHR (electronic health record) embedded exercise application. This was done to evaluate the utility of the exercise app for providers and to understand the usefulness of the exercise app from the perspective of patients.*

*Conception d'une application de réadaptation en cas de troubles musculosquelettiques avec exercices destinée aux personnes à faible revenu pour aider les patients dans des régions mal desservies, dans un cadre de soins primaires*

*Objectif : Concevoir une application d'exercices intégrés au DES (dossier de santé électronique) de la*

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The authors have no disclaimers or competing interests to report in the preparation of this manuscript. The principal author would like to thank the foundation for the Royal College of Chiropractic Sports Sciences (Canada) for their funding support.

**Methods:** *This exercise application was developed through an iterative process with repeated pre-testing and feedback from an interprofessional team and embedded into the EHR at an academic family medicine clinic. Anecdotal feedback from patients was used to inform pre-testing adaptations.*

**Results:** *The application required six iterations prior to clinical utility. It had several features that clinicians and patients felt were beneficial. These features involved a customizable exercise directory with pre-made templated plans which could be further modified. To overcome accessibility barriers, the application was developed to include digital and printable copies with an integrated direct email option for ease of remote sharing with patients.*

**Conclusion:** *A customizable, open-source exercise application was developed to facilitate provider exercise prescription and support patient self-management. This project may be useful for other providers interested in developing similar programs to address musculoskeletal conditions in their patients. Next steps are to undertake pilot testing of the app with broader provider and patient feedback.*

(JCCA. 2022;66(2):130-145)

**KEY WORDS:** app, application, digital, ehealth, rehabilitation, technology, chiropractic

## Introduction

Musculoskeletal disorders (MSDs) are considered the second most common cause of disability globally, with low back pain being the most common.<sup>1</sup> The burden of disability for MSDs has continued to increase with over 1.7 billion people currently in need of rehabilitation for MSDs.<sup>1,2</sup> The large majority of MSDs are managed by primary care alongside conditions of obesity, sedentary

*médecine familiale. Cela visait à évaluer l'utilité de l'application d'exercices pour les prestataires et à en comprendre l'utilité du point de vue des patients.*

**Méthodologie :** *Cette application d'exercices a été élaborée au moyen d'un processus itératif mettant en œuvre une mise à l'essai répétée et une rétroaction d'une équipe interprofessionnelle et intégrée dans le DES d'une clinique universitaire de médecine familiale. Une rétroaction secondaire de patients a contribué aux adaptations de mise à l'essai.*

**Résultats :** *L'application a dû être répétée six fois avant l'utilité clinique. Selon les cliniciens et les patients, plusieurs fonctions ont présenté un avantage. Il s'agissait notamment d'un répertoire d'exercices personnalisable assorti de modèles de plans préconçus et modifiables par la suite. Afin de surmonter les obstacles d'accessibilité, l'application était conçue pour comprendre des versions numériques et imprimables dotées d'une option de courriel direct intégré pour faciliter le partage à distance avec les patients.*

**Conclusion :** *Une application d'exercices personnalisable et ouverte visait à faciliter la prescription d'exercices par les prestataires et à soutenir le traitement autonome des patients. Ce projet peut être utile à d'autres prestataires souhaitant élaborer des programmes semblables pour traiter les problèmes musculosquelettiques de leurs patients. Les étapes suivantes consistent à entreprendre des mises à l'essai de l'application avec un retour d'information plus large de la part des prestataires et des patients.*

(JCCA. 2022;66(2):130-145)

**MOTS CLÉS :** appli, application, numérique, cybersanté, réadaptation, technologie, chiropratique

behaviour, and aging.<sup>1,3</sup> Exercise is currently a first-line treatment, although significant barriers exist to formal exercise participation, such as, financial constraints, work schedules and caregiver responsibilities.<sup>4-6</sup> These barriers are disproportionately higher within low socioeconomic status (SES) populations.<sup>7</sup> Self-directed exercise plans offer a low-cost and effective alternative to frequent or supervised care.<sup>8,9</sup> The use of a written prescription for

exercise and a personal activity journal has also shown to improve adherence with home-based exercise programs among patients.<sup>10</sup> Additionally, digital technology interventions such as mobile health applications (mHealth) have been shown to be an efficient way to support a patients' self-management.<sup>11-15</sup> As no specific modality of exercise has shown to be superior in the management of musculoskeletal pain, improved individualisation of exercise prescription, such as through mHealth, offers the potential for improved outcome in relation to pain.<sup>16-18</sup>

When developing a new technology, two important factors must be considered: usability and acceptability. Usability involves designing app technologies that a person can use for its intended purpose in a real-world setting.<sup>19-21</sup> Acceptability is a multifaceted construct aimed at both the people delivering or receiving a healthcare intervention, and the degree they consider it appropriate.<sup>19-21</sup> A large factor determining the degree an app is deemed acceptable for use is the extent that healthcare professionals (HCPs) feel involved in the development of it. Based on previous literature, both a human-centred design (HCD) and technology acceptance model (TAM) should be used.<sup>19-21</sup> HCD allows for the needs of the healthcare professionals to be considered through the entire design process.<sup>19-21</sup> App development usually involves a multi-stage (iterative) process with multiple versions of the app to ensure it meets the needs of the healthcare professionals and patients.<sup>19-21</sup> The TAM focuses on the app's perceived usefulness and its ease of use.<sup>19-21</sup> By involving key stakeholders, such as the HCPs and patients who will use the app, developers can enhance its pragmatic utility.

In the current practice setting, patients received both verbal and written recommendations for exercise, however there was no department-wide specific process or protocol for the prescription of exercise. This involved non-modifiable printed exercise templates or creating individualised plans from scratch. This approach was considered cumbersome, which limited the ability to provide appropriate individualization of exercise. Providers also did not have a standardised way to record patient progress or adherence. It was felt that the addition of an automated written exercise prescription program (inclusive of educational material on the benefits of exercise) would improve ease of prescription, reduce time to develop an individualised program, increase adherence rates and im-

prove exercise related outcomes, ultimately improving efficacy and efficiency of MSD treatment.

To help improve the care offered for people presenting with MSDs in an inner-city family medicine clinic, an interprofessional team worked to develop and test an exercise prescription application which could be embedded into the clinic's electronic health record (Practice Solutions Suite©). An open source, low-resource application (app) was iteratively designed, modelled on a quality improvement approach, by the team to facilitate the prescription of individualised exercise programs for patients attending for musculoskeletal treatment. The exercise prescription app also builds from previous exercise handouts created for the family practice unit. This app aimed to improve the individualization of the handouts, inefficiencies in clinician-time allocation, and poor adherence amplified due to COVID-19, requiring more use of telehealth visits. No prior EHR embedded exercise prescription software had been available for use in the department, and significant barriers prevented patients from participating in an in-person program, which were exacerbated by the COVID-19 pandemic.

## Methods

### *Setting*

The site for the project was an academic family medicine clinic located in Toronto, Canada, affiliated with the University of Toronto, and staffed by individuals and students from multiple health professions working in an integrated care model. Patients in the facility come from diverse backgrounds with the majority coming from low income, underserved and marginalised communities. The characteristics of the clinic and demographic characteristics of patients have been described previously.<sup>22,23</sup> This highlights the unique barriers and complexities these individuals face when seeking care for pain.<sup>16</sup>

### *Participant characteristics*

In the current practice, patients with MSDs are first evaluated in the clinic by physicians or nurse practitioners for complaints such as pain or functional deficits, and basic management techniques, like exercise, may be offered. Patients are then often referred to the clinic physiotherapists or chiropractors for further assessment and a plan of management. It was considered paramount to optimise

an individuals' abilities to self-manage through conservative measures such as exercise, especially due to decreased in-person sessions from COVID-19.

Project practitioners included primary care clinicians (chiropractors, physiotherapists, family physicians, sports medicine physicians, software development specialists and information technology specialists) who collaborated to develop the exercise prescription app and interface it with the electronic health record (EHR). This was iteratively developed through repeated pre-testing by clinical team members to troubleshoot for any challenges prior to undertaking formal pilot testing and ultimately integration of the exercise app on a department-wide scale. The iteration process was modelled after a QI approach using a modified 'Plan-Do-Study-Act' cycle. Each evolution of the app was tested by study team members who solicited informal feedback from patients as each iterative was evolved during development. The anecdotal feedback was conducted in person during a follow up visit or during a virtual appointment where patients were asked to provide feedback about ease of accessing the electronic exercise prescription, ability to follow the instructions and their compliance with performing the prescribed exercises.

### *Environmental Scan*

A review of the current databases available for exercise rehabilitation plans was conducted to determine relevant utility of software. Previous methods of exercise prescription involved photocopied exercise pamphlets on various musculoskeletal conditions or the use of an online exer-

cise platform that offered a limited, free service or paid version. After review, a meeting was held with project team members with a secondary consultation with other department clinicians to determine interest in the idea and identification of needs. Approval from department leadership was given to proceed with development of the application. During design, the app was focused on the use of features presented in home-based exercise apps and strength and conditioning literature to establish important components for the exercise app.

Specifically, discussions involved what necessary features the app should have available to improve the quality of care for patients and efficiency for clinicians. It was determined that an open-source exercise rehabilitation app would suit the needs of the clinic due to financial constraints and the flexibility it would offer.

Several desired features were noted in development team discussions: a comprehensive exercise directory that allowed for customizability through exercise addition, a tracking log for adherence, pre-templated exercise plans based on region of the body or diagnosis, basic educational information regarding exercise parameters physical activity guidelines, automated exercise plan follow-up emails, and a PDF generator to offer printed copies. From a systems perspective, several specific factors that were discussed included app integration with the current EHR program, auditing for quality assurance as adaptations were made, and ensuring hospital confidentiality and security policies were followed surrounding contacting patients through email for exercise plan purposes. These features are summarised in Figure 1.

HCP perspective	Systems Perspective
Comprehensive exercise directory	Integration within EHR
Customizability	Integration with confidentiality procedures
Pre-templated plans	Auditing for quality assurance
Tracking ability	
Automated email follow-up	
Physical activity education	
PDF generation	

Figure 1.  
*Desired features within exercise app*

Subsequently, development team members had informal consultations with patients receiving musculoskeletal exercise rehabilitation during pre-testing. The discussion involved their opinions on using exercise plans generated from an app to prescribe home exercises, tracking logs and how they would potentially feel about receiving emails regarding adherence. Patients appeared to be receptive to the idea and appreciated their input being sought. The interest expressed by these patients and clinicians resulted in the creation of a development team composed of clinicians, administrators, technology specialists and researchers.

## Results

A total of six iterations were completed with only minor changes made to the app on the final two iterations. Feedback from the providers testing and the patients who received exercise prescription through the app over the last two iterations indicated that it was ready for pilot testing. After each cycle of feedback was received, a decision made by consensus from the study team regarding the recommended amendments directed the changes.

Based on the parameters identified in Figure 1, the app evolved based on iterative input then developed using an active folder from which to extract photos and designed using the macro functions on Microsoft Excel (<https://www.microsoft.com/en-us/microsoft-365/excel>). A macro function is a piece of programming code that runs in Excel to record and playback functions to save time and minimize human error.<sup>24</sup> Further details of the revisions are outlined in Appendix 1. The application was integrated into the internal hospital system, although personal computer use is possible.

To ensure that the exercise app was personalised to the individual, each component of the exercise plan was made customizable. This allowed for the HCP to tailor the pre-made exercise templates to the personal needs of the patient. The app includes pre-made exercise templates (according to body location and clinical diagnosis) and a template generator (Appendix 2) that could generate new customizable plans to change exercise or parameters such as rest time, repetitions, and sets based on clinician preference.

The app also included a customizable exercise prescription form that is presented at the beginning of each generated plan (Appendix 3). This allowed for education

on the importance and benefits of exercise, such as the Canadian physical activity guidelines, in addition to other resources than an HCP felt may be necessary for an individual's care.<sup>25</sup>

The built-in customizable exercise database allowed providers to add exercises as needed (Appendix 4). Exercise examples were extracted from an open-source exercise directory website.<sup>26</sup> Instructional exercise pictures and video hyperlinks previously identified and accessed by the family health team were integrated on an individual clinician basis prior to implementation of the app. The prescribed exercise programs are logged in the patients' EHR and transferable to an automated email or printable PDF. The email includes an automatically generated exercise prescription and educational form, customized exercise parameters and hyperlinks to instructional photos and videos, and a personalized tracking log in Excel spreadsheet and PDF format (Appendices 5 to 8). The PDF copy (Appendix 8) includes the exercise prescription and educational form, exercise parameters and photos, and an eight-week tracking log.

Based on pre-testing feedback, a secondary PDF option was developed, enabling printing of the prescription, to minimize technical constraints for some patients. The tracking log allows for self-reporting of exercise for the patient's own record or for the HCP to review and use to modify the exercise plan. This information provides an indication of the patient's progress and adherence.

## Discussion

Introducing technology to HCPs is challenging, let alone during a pandemic requiring changes to intervention implementation. Although barriers to the use of the app were identified within this paper, solutions were offered by team members. By having users involved in the development of the technology, revisions could be made more efficiently, with a primary focus on usability and acceptability.

This app was developed by HCPs through a user-led design approach. This project involved input by key users regarding their needs at pivotal design points, with less formal input throughout the entire development process. The project team consulted with different HCP prescribers, such as physicians, chiropractors, physiotherapists, and nurse practitioners through the stages of development to allow for a diversity of inputs. Overall, the benefits



of the exercise app centred around its low resource and low-cost requirements, simplicity, efficiency, and tailored utility. This helped make it more acceptable to clinicians and alleviated barriers related to technology integration. HCP familiarity with the app through the design and testing stage, integration with EHR software, and cost- and time-efficiency are factors that have been identified as facilitators for uptake of mHealth technology.<sup>27</sup> Our approach and early findings are consistent with previous literature that using digital technology in this way offers an innovative means to reduce the barriers to accessing care in a musculoskeletal primary care setting.<sup>10-11,15</sup>

### App development barriers and limitations

#### *Hospital policies for contact*

Due to policies related to confidentiality and consent to email, several changes and adaptations were made to the app. The EHR system uses a confidential email service to prevent patients from gaining access to HCP email addresses. Due to the exercise app's automated email function working through Microsoft Outlook, this led to a barrier in ability to email patients their exercise plans. As such, a work-around was developed, in which the email body would be generated on the exercise app. The clinician would then 'copy and paste' the dialogue box into the email body and attach the patient's Excel exercise tracking log manually. Although the ease of use was diminished slightly, it allowed for a pragmatic workaround without diminishing the quality of care for the patient.

A second issue which arose due to policies surrounding emailing was related to the automated adherence email feature. This was related to the app's ability to build active and past patient rosters which automatically sent adherence emails to patients. Due to the fundamental software limitations of Microsoft Excel and department policies related to privacy concerns it was decided that it would not be a feature that could be used in this way in the final version.

The department also requires written consent from patients to email, posing a potential barrier to receiving an exercise program by email. An additional dialogue box was added to acknowledge if consent to email was given. If consent was not given, clinicians would write, 'no' in the box and the app would not send any emails.

Finally, a minimal sample of patients were asked for feedback regarding the exercise rehabilitation app. Our aim is to further engage patients for their perspectives on ease of use and applicability in the upcoming pilot testing phase. This will allow for integration of features that better suit the needs of patients and clinicians. Once the pilot-testing is completed, the project team will present the results to the department's Patient and Family Advisory Committee for input into future iterations of the app.

#### *Computer software*

Due to the design of the exercise app being formatted for Microsoft Excel on PC computers, it is not compatible for Apple devices. This limitation was discussed during design but was considered a non-issue during the pre-testing phase as the hospital uses only PC computers and the Microsoft Windows operating system.

#### *Patient engagement*

Although care has been taken to make this app accessible to HCPs and patients, the characteristics of this patient population may pose unique challenges. Self-tracking of exercise adherence is the most cost-effective way of measuring patient progress. However, self-tracking can be cumbersome for patients and self-tracked data can be ascribed moral or emotional value which can be detrimental to progress and the patient-provider relationship.<sup>27</sup> This is particularly true of patients with multiple chronic conditions, elderly patients, and less affluent patients, all of whom make up a significant proportion of this patient population.<sup>22,23,28</sup> To mitigate these effects, a patient-centred model of care is essential where patients are involved in personal goal-setting, leading to individualized and goal-specific exercise prescription which can improve motivation and compliance. To address issues of technology access, patients are able to receive emailed or printed copies of the exercise prescription. This retains the accessibility for HCPs who are able to access the app from within the EHR, while providing access options for patients with varying levels of technological proficiency. The patient population is also unique in its high proportion of recent immigrants and individuals who may otherwise have low fluency in English.<sup>23</sup> Communication regarding the importance of physical activity, and instructions for specific exercises can often be difficult. Integration of photo- and video-based exercise instructions is

included in the prescription, which may help mitigate this challenge. Finally, although mHealth technology has seen a significant increase in usage in recent years, evidence supporting significant positive impacts on patient health outcomes remains weak.<sup>29</sup> Rigorous methodological approaches are required to effectively track outcomes and determine the value of this exercise prescription app as well as other mHealth tools.

## Conclusion

As technology development and utilization continues to increase within healthcare settings, it becomes imperative to understand the strengths, limitations, and integration procedures of different technological innovations that may be applied in primary care.

Recognizing the burden of musculoskeletal conditions seen in our primary care setting, the department undertook to develop an exercise application which could be integrated into the department electronic health record for use by interprofessional health providers and their patients. This paper describes the preliminary work undertaken by our family medicine department and the approach used to develop the application and its successful integration into the EHR based on iterative feedback from providers and patients during the app's development process. Next steps are to formally pilot test the app with a broader range of HCPs and with patients evaluate its utility and applicability. Upon completion of pilot testing, the app will become available for others to freely use, enabling its transferability, and scaling with the hope of improving rehabilitation for people with MSDs.

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Appendix 1.  
Timeline and revisions

Access Exercise App V1.	September 1st, 2020	Initial concept and discussion <ul style="list-style-type: none"> <li>• Initial programming and design instructions in word document</li> </ul>
Access Exercise App V1.1	September 3rd, 2020	Hospital consent addition
Access Exercise App V2.0	September 16, 2020	<ul style="list-style-type: none"> <li>• Modified to only show patient first name for generated exercise plans</li> <li>• ‘Remove duplicates’ feature in exercise directory</li> <li>• Added drop-down menu for exercise templates for specific body parts</li> <li>• Finalizing emailing system</li> <li>• Automated expired patients to ‘Past Patients’ tab from active patients tab</li> </ul>
Access Exercise App V2.1	October 23, 2020	<ul style="list-style-type: none"> <li>• Added auto-populate PDF exercise plan</li> <li>• Added auto-populate excel exercise tracking sheet</li> <li>• Added auto-add excel exercise tracking sheet to email template</li> </ul>
Access Exercise App V3.0	January 15, 2021	<ul style="list-style-type: none"> <li>• Added additional drop-down programs for specific musculoskeletal conditions</li> <li>• Added exercise prescription and education tab for PDFs and emails</li> <li>• Multiple small bugs worked out over this time frame from previous versions</li> </ul>
Access Exercise App V4.0	July 7, 2021	<ul style="list-style-type: none"> <li>• Added template generator to allow individuals to make their own customized exercise plans</li> <li>• Revised email function to include Excel exercise tracking log and PDF exercise tracking log</li> <li>• Simplified tabs to include the following: <ul style="list-style-type: none"> <li>◦ Main (<i>email, print, populate</i>)</li> <li>◦ Prescription</li> <li>◦ Exercise Directory</li> <li>◦ Template Generator</li> </ul> </li> <li>• All other previous tabs hidden (option to make visible available) <ul style="list-style-type: none"> <li>◦ ‘Patient’ and ‘Past Patient’ tabs</li> </ul> </li> <li>• Multiple small bugs worked out over this time frame from previous versions</li> </ul>

Appendix 2.  
Pre-made templates and modifiable exercise parameters

Pre Made Templates		Tennis and Golfers Elbow			< Drop Down Menu			
	Enter Exercise Below	Region	Enter Sets Below	Enter Reps Below	Enter TUT Below	Video URL	Picture URL	Picture File Name
Exercise-1	Wrist Extension Stretch	Wrist	1	5	15	<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Wrist Extension Stre
Exercise-2	Wrist Flexion Stretch	Wrist	1	5	15	<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Wrist Flexor Stretch
Exercise-3	Free Weight - Wrist Extensi	Wrist	3	15-20		<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Free Weight - Wrist
Exercise-4	Free Weight - Wrist Flexion	Wrist	3	15-20		<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Free Weight - Wrist
Exercise-5	Hammer Pronation-Supinat	Wrist	3	12-15		<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Hammer Pronation-
Exercise-6	Stress Ball Squeeze	Hand	1	10		<a href="https://www.he">https://www.he</a>		Stress Ball Squeeze
Exercise-7	Finger Stretch	Hand	1	10		<a href="https://www.he">https://www.he</a>		Finger Stretch.jpg
Exercise-8								
Exercise-9								
Exercise-10								
Exercise-11								
Exercise-12								
Exercise-13								
Exercise-14								
Exercise-15								

Pre Made Templates		Tennis and Golfers Elbow			< Drop Down Menu			
	Enter Exercise Below	Region	Enter Sets Below	Enter Reps Below	Enter TUT Below	Video URL	Picture URL	Picture File Name
Exercise-1	Wrist Extension Stretch	Wrist	1	5	15	<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Wrist Extension Stre
Exercise-2	Wrist Flexion Stretch	Wrist	1	5	15	<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Wrist Flexor Stretch
Exercise-3	Free Weight - Wrist Extensi	Wrist	3	15-20		<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Free Weight - Wrist
Exercise-4	Free Weight - Wrist Flexion	Wrist	3	15-20		<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Free Weight - Wrist
Exercise-5	Hammer Pronation-Supinat	Wrist	3	12-15		<a href="https://play">https://play</a>	<a href="https://www.he">https://www.he</a>	Hammer Pronation-
Exercise-6	Stress Ball Squeeze	Hand	1	10		<a href="https://www.he">https://www.he</a>		Stress Ball Squeeze
Exercise-7	Finger Stretch	Hand	1	10		<a href="https://www.he">https://www.he</a>		Finger Stretch.jpg
Exercise-8								
Exercise-9								
Exercise-10								

Enter Template Name Below							Populate
#	Exercise	Category	Sets	Reps	Seconds	Video URL	
	Frozen Shoulder						
#	Shoulder AAROM (abduction)	Shoulder	3	12 to 15		<a href="https://player.vimeo.com">https://player.vimeo.com</a>	
#	Shoulder AAROM (ER)	Shoulder	3	12 to 15		<a href="https://www.youtube.co">https://www.youtube.co</a>	
#	Shoulder AAROM (flexion)	Shoulder	3	12 to 15		<a href="https://player.vimeo.com">https://player.vimeo.com</a>	
#	Shoulder AAROM (HBB)	Shoulder	3		30	<a href="https://media.physitrack">https://media.physitrack</a>	
#	Shoulder AROM (scaption)	Shoulder	3	12 to 15		<a href="https://player.vimeo.com">https://player.vimeo.com</a>	
#							

Appendix 3.  
Exercise prescription and guideline tab



This exercise plan has been prescribed to you by your health care professional for physical rehabilitation purposes.

Perform this rehabilitative exercise plan once daily unless specified otherwise.

**FITT Principle**

- \* Frequency - How often you exercise
- \* Intensity - How hard you exercise
- \* Time - How long you exercise
- \* Type - What kind of exercise you do

**Exercise Parameters**

- \* Reps - the number of times you perform a specific exercise
- \* Sets - the number of cycles of reps that you complete
- \* Rest - the amount of time between sets

**Exercise Intensity Based on Maximum Heart Rate**

Calculate Maximum Heart Rate = (220 - Age)

1. Low Intensity - Less than 70% (you can carry a conversation while exercising)
2. Moderate Intensity - 70 to 85% (you can talk in short bursts between breaths)
3. High Intensity - Greater than 85% (you are unable to talk during exercise)

**Types of Exercise**

- \* Aerobic Exercise - tends to be longer duration with greater improvements in cardiorespiratory fitness
- \* Resistance Exercise - tends to involve an external load and effects muscular strength

**Benefits of Exercise - Canadian 24-Hour Movement Guidelines**

- \* A lower risk of mortality, cardiovascular disease, hypertension, type 2 diabetes, several cancers, anxiety, depression, dementia, weight gain, adverse blood lipid profile
- \* Improved bone health, cognition, quality of life and physical function.

Visit [www.csepguidelines.ca](http://www.csepguidelines.ca) for more information

Please notify your health care professional if you experience worsening of symptoms.

## Appendix 4. Exercise directory tab

Sort By Exercise

Sort By Category

Remove Dups

#	Exercise	Category	Sets	Reps	Seconds	Video URL	Picture URL	Picture File Name
1	Band Sidesteeps	Lower Body	3	15 to 20		<a href="https://player.vimeo.com/video/411180156?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/411180156?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=92258&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=92258&amp;userRef=gclaaake</a>	Band Sidesteeps.jpg
2	Banded Pull Aparts	Midback	3	15 to 20		<a href="https://player.vimeo.com/video/26683195?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/26683195?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=82434&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=82434&amp;userRef=gclaaake</a>	Banded Pull Aparts.jpg
3	Bicep Curls	Arms	3	8		<a href="https://www.youtube.com/watch?v=FN43sqjCA">https://www.youtube.com/watch?v=FN43sqjCA</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=40368&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=40368&amp;userRef=gclaaake</a>	bicep curl.jpg
4	Bird Dog	Core	3	15 to 20		<a href="https://www.youtube.com/watch?v=FN43sqjCA">https://www.youtube.com/watch?v=FN43sqjCA</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=40368&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=40368&amp;userRef=gclaaake</a>	Bird-dog.jpg
5	Calf Raises	Ankle	3	12 to 15		<a href="https://player.vimeo.com/video/61979281?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/61979281?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=144&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=144&amp;userRef=gclaaake</a>	Calf Raises.jpg
6	Calf Stretch on a Stair	Ankle	3	15 to 30			<a href="https://www.hep2go.com/exercise_editor.php?exid=15840&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=15840&amp;userRef=gclaaake</a>	Calf Stretch on a Stair.jpg
7	Calf Stretch With Towel	Ankle	3	15 to 30		<a href="https://player.vimeo.com/video/42296385?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/42296385?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=102&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=102&amp;userRef=gclaaake</a>	Calf Stretch With Towel.jpg
8	Cat Camels	Midback	3	12 to 15		<a href="https://player.vimeo.com/video/36629289?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/36629289?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=327&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=327&amp;userRef=gclaaake</a>	Cat Camels.jpg
9	Chair Stand	Lower Body	3	12 to 15		<a href="https://player.vimeo.com/video/36630481?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/36630481?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=154&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=154&amp;userRef=gclaaake</a>	Chair Stand.jpg
10	Chin Tuck with Towel	Neck	3	12 to 15		<a href="https://player.vimeo.com/video/43015814?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/43015814?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=5930&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=5930&amp;userRef=gclaaake</a>	Chin Tuck with Towel.jpg
11	Crossover Arm Stretch	Shoulder	1	4	15 to 30		<a href="https://www.hep2go.com/exercise_editor.php?exid=44426&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=44426&amp;userRef=gclaaake</a>	Crossover Arm Stretch.jpg
12	Diaphragmatic Breathing	Core	3	60		<a href="https://player.vimeo.com/video/26502129?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/26502129?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=357&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=357&amp;userRef=gclaaake</a>	Diaphragmatic Breathing.jpg
13	Elastic Band - Dorsiflexion	Ankle	3	12 to 15		<a href="https://player.vimeo.com/video/6123533?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/6123533?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=78&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=78&amp;userRef=gclaaake</a>	Elastic Band - Dorsiflexion.jpg
14	Elastic Band - Anti-Rotation	Midback	3	30		<a href="https://player.vimeo.com/video/5873561?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/5873561?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=525&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=525&amp;userRef=gclaaake</a>	Elastic Band - Anti-Rotation.jpg
15	Elastic Band - Hamstring Curls	Knee	3	15 to 20		<a href="https://player.vimeo.com/video/63295488?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/63295488?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=198&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=198&amp;userRef=gclaaake</a>	Elastic Band - Hamstring Curls.jpg
16	Elastic Band - Hip Abduction	Hips	3	15 to 20		<a href="https://player.vimeo.com/video/36629786?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/36629786?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=8074&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=8074&amp;userRef=gclaaake</a>	Elastic Band - Hip Abduction.jpg
17	Elastic Band - Hip Extension	Hips	3	15 to 20		<a href="https://player.vimeo.com/video/36629806?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/36629806?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=8075&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=8075&amp;userRef=gclaaake</a>	Elastic Band - Hip Extension.jpg
18	Elastic Band - Knee Extension	Knee	3	15 to 20		<a href="https://player.vimeo.com/video/62476634?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/62476634?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=419&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=419&amp;userRef=gclaaake</a>	Elastic Band - Knee Extension.jpg
19	Elastic Band - Single Leg Press	Lower Body	3	15 to 20		<a href="https://player.vimeo.com/video/31532723?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/31532723?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=69880&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=69880&amp;userRef=gclaaake</a>	Elastic Band - Single Leg Press.jpg
20	Elastic Band - Straight Leg Raise	Hips	3	15 to 20		<a href="https://player.vimeo.com/video/53194996?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/53194996?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=8519&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=8519&amp;userRef=gclaaake</a>	Elastic Band - Straight Leg Raise.jpg
21	Elastic Band Pinch Grip - Index Finger	Wrist	3	30		<a href="https://www.hep2go.com/exercise_editor.php?exid=46866&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=46866&amp;userRef=gclaaake</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=46866&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=46866&amp;userRef=gclaaake</a>	Elastic Band Pinch Grip - Index Finger.jpg
22	Elastic Band Pinch Grip - Pinky Finger	Wrist	3	30		<a href="https://www.hep2go.com/exercise_editor.php?exid=46867&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=46867&amp;userRef=gclaaake</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=46867&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=46867&amp;userRef=gclaaake</a>	Elastic Band Pinch Grip - Pinky Finger.jpg
23	External Rotation With Arm Abducted 90°	Shoulder	3	8		<a href="https://player.vimeo.com/video/54175956?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/54175956?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=7851&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=7851&amp;userRef=gclaaake</a>	External Rotation With Arm Abducted 90.jpg
24	Farmers Walk	Full Body	1	120		<a href="https://player.vimeo.com/video/29403383?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/29403383?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=63498&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=63498&amp;userRef=gclaaake</a>	Farmers Walk.jpg
25	Finger Stretch	Hand	1	10			<a href="https://www.hep2go.com/exercise_editor.php?exid=39385&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=39385&amp;userRef=gclaaake</a>	Finger Stretch.jpg
26	Free Weight - Wrist Extension	Wrist	3	15 to 20		<a href="https://player.vimeo.com/video/39674292?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/39674292?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=40&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=40&amp;userRef=gclaaake</a>	Free Weight - Wrist Extension.jpg
27	Free Weight - Wrist Flexion	Wrist	3	15 to 20		<a href="https://player.vimeo.com/video/39673998?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/39673998?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=38&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=38&amp;userRef=gclaaake</a>	Free Weight - Wrist Flexion.jpg
28	Glute Bridge	Hips	3	30		<a href="https://www.youtube.com/watch?v=PwM8icPu6H8">https://www.youtube.com/watch?v=PwM8icPu6H8</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=37843&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=37843&amp;userRef=gclaaake</a>	Glute Bridge.jpg
29	Hammer Pronation-Supination	Wrist	3	12 to 15		<a href="https://player.vimeo.com/video/59778631?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/59778631?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=4675&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=4675&amp;userRef=gclaaake</a>	Hammer Pronation-Supination.jpg
30	Ham Adduction Pillow Squeeze	Hips	3	15 to 20		<a href="https://www.youtube.com/watch?v=DinNYxQwFk">https://www.youtube.com/watch?v=DinNYxQwFk</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=69301&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=69301&amp;userRef=gclaaake</a>	Sit to stand with band.jpg
31	Inversion Isometric	Ankle	3	30		<a href="https://player.vimeo.com/video/53191463?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/53191463?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=8517&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=8517&amp;userRef=gclaaake</a>	Inversion Isometric.jpg
32	Modified Curl Up	Core	3	12 to 15		<a href="https://www.youtube.com/watch?v=94ELae3dtig">https://www.youtube.com/watch?v=94ELae3dtig</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=28149&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=28149&amp;userRef=gclaaake</a>	Modified Curl Up.png
33	Pendulum	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/57256767?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/57256767?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=186&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=186&amp;userRef=gclaaake</a>	Pendulum.jpg
34	Plank	Core	2	30		<a href="https://www.youtube.com/watch?v=1Wpbe9iRySc">https://www.youtube.com/watch?v=1Wpbe9iRySc</a>	<a href="https://hips.hearstapps.com/hmg-prod.s3.amazonaws.com/images/hdm119918m13842-1545227096.png">https://hips.hearstapps.com/hmg-prod.s3.amazonaws.com/images/hdm119918m13842-1545227096.png</a>	Plank.jpg
35	Prone T	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/2989772?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/2989772?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=1975&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=1975&amp;userRef=gclaaake</a>	Prone T.jpg
36	Prone W	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/72424949?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/72424949?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=14081&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=14081&amp;userRef=gclaaake</a>	Prone W.jpg
37	Resisted bilateral shoulder ER	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/72254607?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/72254607?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=202&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=202&amp;userRef=gclaaake</a>	Resisted bilateral shoulder ER.jpg
38	Resisted ER (at side)	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/56793702?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/56793702?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=209&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=209&amp;userRef=gclaaake</a>	Resisted ER (at side).jpg
39	Resisted IR (at side)	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/56794645?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/56794645?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=213&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=213&amp;userRef=gclaaake</a>	Resisted IR (at side).jpg
40	Resisted row	Back	3	12 to 15		<a href="https://player.vimeo.com/video/56794797?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/56794797?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=216&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=216&amp;userRef=gclaaake</a>	Resisted row.jpg
41	Resisted scaption	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/53940449?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/53940449?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=8094&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=8094&amp;userRef=gclaaake</a>	Resisted scaption.jpg
42	Standing Calf Stretch	Ankle	3	15 to 30		<a href="https://player.vimeo.com/video/220581654?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/220581654?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=1&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=1&amp;userRef=gclaaake</a>	STANDING CALF STRETCH - GASTROCNEMIUS.jpg
43	Serratus slide	Shoulder	3	12 to 15		<a href="https://player.vimeo.com/video/53784593?title=1&amp;byline=0&amp;portrait=0">https://player.vimeo.com/video/53784593?title=1&amp;byline=0&amp;portrait=0</a>	<a href="https://www.hep2go.com/exercise_editor.php?exid=8253&amp;userRef=gclaaake">https://www.hep2go.com/exercise_editor.php?exid=8253&amp;userRef=gclaaake</a>	Serratus slide.ico



## Appendix 5. Excel template e-mail

Email Body- Hello John,

Exercise-1 Wrist Exte Wrist  
Sets- 1  
Reps- 05-Jan  
TUT- 15  
Video- <https://player.vimeo.com/video/396813350?title=1&byline=0&portrait=0&autoplay=1&quality=4k&loop=1&controls=1&transparent=1&share=false>  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=41&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=41&userRef=gciaake)

Exercise-2 Wrist Flex Wrist  
Sets- 1  
Reps- 05-Jan  
TUT- 15  
Video- <https://player.vimeo.com/video/396812823?title=1&byline=0&portrait=0&autoplay=1&quality=4k&loop=1&controls=1&transparent=1&share=false>  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=43&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=43&userRef=gciaake)

Exercise-3 Free Weig Wrist  
Sets- 3  
Reps- 15-20  
TUT-  
Video- <https://player.vimeo.com/video/396742972?title=1&byline=0&portrait=0&autoplay=1&quality=4k&loop=1&controls=1&transparent=1&share=false>  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=40&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=40&userRef=gciaake)

Exercise-4 Free Weig Wrist  
Sets- 3  
Reps- 15-20  
TUT-  
Video- <https://player.vimeo.com/video/396739998?title=1&byline=0&portrait=0&autoplay=1&quality=4k&loop=1&controls=1&transparent=1&share=false>  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=38&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=38&userRef=gciaake)

Exercise-5 Hammer P Wrist  
Sets- 3  
Reps- 15-Dec  
TUT-  
Video- <https://player.vimeo.com/video/59778633?title=1&byline=0&portrait=0&autoplay=1&quality=4k&loop=1&controls=1&transparent=1&share=false>  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=4675&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=4675&userRef=gciaake)


Exercise-6 Stress Ball Hand  
Sets- 1  
Reps- 10  
TUT-  
Video-  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=94255&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=94255&userRef=gciaake)

Exercise-7 Finger Stret Hand  
Sets- 1  
Reps- 10  
TUT-  
Video-  
Picture- [https://www.hep2go.com/exercise\\_editor.php?exId=39385&userRef=gciaake](https://www.hep2go.com/exercise_editor.php?exId=39385&userRef=gciaake)

All the best,



Appendix 6.  
Outlook template e-mail

  
Send


To

jsmith@outlook.com

Cc

Subject

Exercise Rehab



John Smith\_01 23 21.xlsx

11 KB

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Hello John,

This exercise plan has been prescribed to you by your health care professional for physical rehabilitation purposes. Perform this rehabilitative exercise plan once daily unless specified otherwise.

**FITT Principle**

- \* Frequency - How often you exercise
- \* Intensity - How hard you exercise
- \* Time - How long you exercise
- \* Type - What kind of exercise you do

**Exercise Parameters**

- \* Reps - the number of times you perform a specific exercise
- \* Sets - the number of cycles of reps that you complete
- \* Rest - the amount of time between sets

**Exercise Intensity Based on Maximum Heart Rate**

Calculate Maximum Heart Rate = (220 - Age)

1. Low Intensity - Less than 70% (you can carry a conversation while exercising)
2. Moderate Intensity - 70 to 85% (you can talk in short bursts between breaths)
3. High Intensity - Greater than 85% (you are unable to talk during exercise)

**Types of Exercise**

- \* Aerobic Exercise - tends to be longer duration with greater improvements in cardiorespiratory fitness
- \* Resistance Exercise - tends to involve an external load and effects muscular strength

**Benefits of Exercise - Canadian 24-Hour Movement Guidelines**

- \* A lower risk of mortality, cardiovascular disease, hypertension, type 2 diabetes, several cancers, anxiety, depression, dementia, weight gain, adverse blood lipid profile
- \* Improved bone health, cognition, quality of life and physical function.

Visit [www.csepguidelines.ca](http://www.csepguidelines.ca) for more information

Please notify your health care professional if you experience worsening of symptoms.

**Exercise-1 Wrist Extension Stretch Wrist**  
Sets- 1  
Reps- 1000-01-06  
TUT- 15  
Video- [Click Here](#)  
Picture- [Click Here](#)

**Exercise-2 Wrist Flexion Stretch Wrist**  
Sets- 1  
Reps- 1000-01-06  
TUT- 15  
Video- [Click Here](#)  
Picture- [Click Here](#)

**Exercise-3 Free Weight - Wrist Extension Wrist**  
Sets- 3  
Reps- 15-20  
TUT-  
Video- [Click Here](#)  
Picture- [Click Here](#)


**Exercise-4 Free Weight - Wrist Flexion Wrist**  
Sets- 3  
Reps- 15-20  
TUT-  
Video- [Click Here](#)  
Picture- [Click Here](#)

**Exercise-5 Hammer Promotions Supination Wrist**  
Sets- 3  
Reps- 2023-12-15  
TUT-  
Video- [Click Here](#)  
Picture- [Click Here](#)

**Exercise-6 Stress Ball Squeeze Hand**  
Sets- 1  
Reps- 10  
TUT-  
Video-  
Picture- [Click Here](#)

**Exercise-7 Finger Stretch Hand**  
Sets- 1  
Reps- 10  
TUT-  
Video-  
Picture- [Click Here](#)

All the best,



**UNITY HEALTH**  
TORONTO  
Caring hearts. Leading minds.

Appendix 7.  
Auto-generated Excel tracking log

	Week 1			Week 2			Week 3			Week 4			Week 5			Week 6			Week 7			Week 8					
	Sets	Loads	Reps	Sets	Loads	Reps	Sets	Loads	Reps	Sets	Loads	Reps	Sets	Loads	Reps	Sets	Loads	Reps	Sets	Loads	Reps	Sets	Loads	Reps			
Exercise-1																											
Wrist Extension Stretch	1		5	1		5	1		5	1		5	1		5	1		5	1		5	1		5	1		5
Exercise-2																											
Wrist Flexion Stretch	1		5	1		5	1		5	1		5	1		5	1		5	1		5	1		5	1		5
Exercise-3																											
Free Weight - Wrist Extension	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20
	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20
	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20
Exercise-4																											
Free Weight - Wrist Flexion	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20	1		15-20
	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20	2		15-20
	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20	3		15-20
Exercise-5																											
Hammer Pronation-Supination	1		12-15	1		12-15	1		12-15	1		12-15	1		12-15	1		12-15	1		12-15	1		12-15	1		12-15
	2		12-15	2		12-15	2		12-15	2		12-15	2		12-15	2		12-15	2		12-15	2		12-15	2		12-15
	3		12-15	3		12-15	3		12-15	3		12-15	3		12-15	3		12-15	3		12-15	3		12-15	3		12-15
Exercise-6																											
Stress Ball Squeeze	1		10	1		10	1		10	1		10	1		10	1		10	1		10	1		10	1		10
Exercise-7																											
Finger Stretch	1		10	1		10	1		10	1		10	1		10	1		10	1		10	1		10	1		10

## Appendix 8. Auto-generated PDF exercise plan and tracking log

Hello John,

**Rx** This exercise plan has been prescribed to you by your health care professional for physical rehabilitation purposes.

Perform this rehabilitative exercise plan once daily unless specified otherwise.

**FITT Principle**

- Frequency - How often you exercise
- Intensity - How hard you exercise
- Time - How long you exercise
- Type - What kind of exercise you do

**Exercise Parameters**

- Reps - the number of times you perform a specific exercise
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- Improved bone health, cognition, quality of life and physical function.


[Visit www.csepguidelines.ca for more information](http://www.csepguidelines.ca)

Please notify your health care professional if you experience worsening of symptoms.

Exercise-1 Wrist Extension Stretch Wrist

Sets- 1  
Reps- 1900-01-04  
TUT- 15

Week	1	2	3	4	5	6	7	8
Sets								
Reps								



Exercise-2 Wrist Flexion Stretch Wrist

Sets- 1  
Reps- 1900-01-04  
TUT- 15

Week	1	2	3	4	5	6	7	8
Sets								
Reps								

