The Impact of an Insulin/Carbohydrate Adjustment Algorithm App on Individual Blood Glucose Management During Planned Exercise

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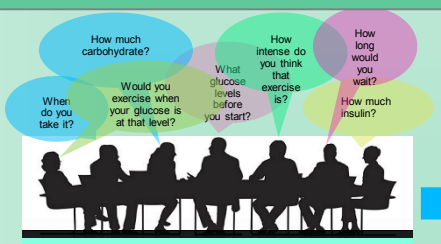
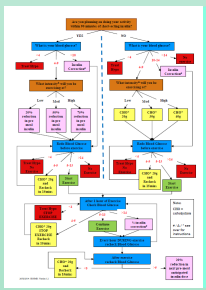
Stage 1 Algorithm & Initial App Design



Discussion group – people with Type-1 diabetes, confident with exercise and managing their diabetes



Algorithm based on expertise of people with Type 1 diabetes

openbrolly

App brochure

RGU

Case Based Reasoning

Online education resource

NHS Highland

University of the Highlands and Islands
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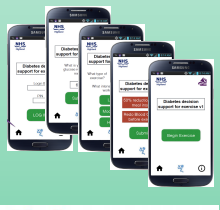


Private Group

facebook

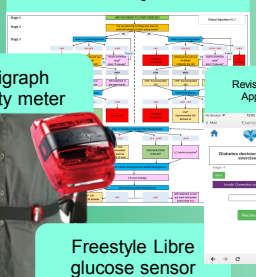
openbrolly

App brochure refinement

App brochure review and feedback

Stage 2 App and algorithm testing

Revised algorithm



Actigraph activity meter

Revised App

Freestyle Libre glucose sensor

Participants
- Used the app during exercise
- Wore an activity monitor
- Wore continuous glucose sensor
- Took part in discussion and feedback on Facebook forum
- Participated in focus groups
- Ranked approaches to visual representation of CBR data
- Provided feedback on online education resources

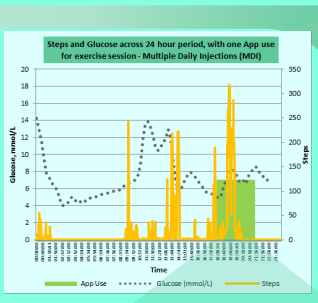
Study participants (n=10) recruited through Facebook group
- Type 1 Diabetes
- Physically very active
- Confident diabetes management
- Insulin pump users and multiple daily injectors

facebook

Private Group

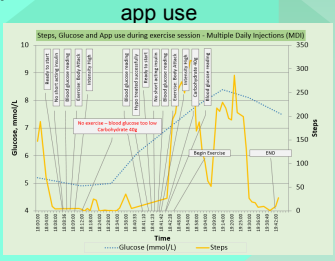
Findings

APP USE



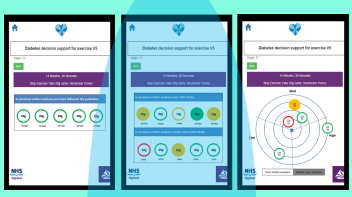
Use of the app supported improved blood glucose control during exercise sessions

Detail of app use



CBR VISUALISATION OPTIONS

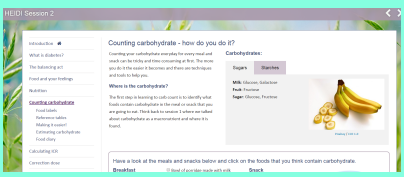
Study participants given
- choice of ways of presenting similar exercise sessions with likely outcomes illustrated using a traffic light system
- options to see more detail for specific exercise sessions where click on different circles (exercise sessions) allows comparison of actions around carbohydrate intake and insulin corrections and outcomes



Preferred Approach

EDUCATION

App users directed to relevant HEIDI online education resources based on outcomes of exercise session.



Future work

Linking the app to self-monitoring blood glucose systems will enable automated update of glucose data and enhance user experiences

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Rural Health and Wellbeing
Slàinte Dhùthchail agus Deagh Chor