香港浸會大學
HONG KONG BAPTIST UNIVERSITY

Yanping DUAN <duanyp@hkbu.edu.hk>

[SPE] Request to Extend Completion Deadline--FRG2/17-18/099

1 message

hkburc@hkbu.edu.hk <hkburc@hkbu.edu.hk> Thu, Feb 20, 2020 at 5:51 PM
To: duanyp@hkbu.edu.hk
Cc: hkburc@hkbu.edu.hk, foasys@hkbu.edu.hk, molly@hkbu.edu.hk

Dear Dr Duan, Yanping (SPE),

I would like to confirm that your request to extend the completion deadline of project no. FRG2/17-18/099 has been approved. The new completion date is 31 May 2021. Please note that you could also view the result in the U-Wide Research Project System (RPS) through the BUniPort.

RC Chairman's Comments :

Thank You.

Secretary, Research Committee

For enquiries, please contact Ms. Kit Ng at extn. 7940.

(Please submit the application in English)

Hong Kong Baptist University

Faculty Research Grant *Category II*

Application Form

(Funding Limit: $150,000)

1. **Project Title:**

   Evaluation of an E-intervention on multiple health behaviour change for Chinese cardiac patients in home-based rehabilitation

2. **Name(s) of Applicant(s):**

	Name	Department & Post Title	HKBU Staff I.D. No.
Principal Investigator: (with title e.g. Prof., Dr., Ms., Miss)	Dr Duan Yanping	Assistant Professor PE	118411
Co-investigator(s): (with title e.g. Prof., Dr., Ms., Miss)	Dr Lan Guo	Guangdong General Hospital	
	Mr Liang Wei	PE Hong Kong Baptist University	
	Prof Lippke Sonia	Jacobs University Bremen	

3. **Abstract of research:**

   (Please provide a short abstract of ½ page or 200 words. The abstract should be comprehensible to a non-specialist)

By using the Health Action Process Approach (HAPA) model as a theoretical backdrop, the proposed study aims to provide an 8-week e-health learning strategies for Chinese cardiac patients, with which they can follow at home after rehabilitation discharge.

166 participants will be recruited from an outpatient cardiac rehabilitation center in China. Eligible participants will be randomly assigned into one of two groups. (1) Intervention group (IG): simultaneously physical activity (PA) and fruit and vegetable intake (FVI) (week 1-8); and (2) the waiting list control group (WCG): not participate in any support program during the intervention period. The testing indicators consist of PA (International Physical Activity Questionnaires; IPAQ), self-reported FVI, combined healthy lifestyle, social-cognitive variables of two behaviors (self-efficacy, intention, planning, social support), quality of life and depression. All indicators will be conducted at the beginning of intervention (T1), at the end of intervention (T2), and three-month follow-up (T3). All data collection will be completed via e-health learning website with electronic questionnaires.

The current study will examine whether the cardiac rehabilitation patients in IG increase their PA level and FVI, improve the social-cognitive variables of PA and FVI, and enhance mental health outcomes in comparison with control condition; and whether the social-cognitive variables mediate the association between intervention and adopting a healthy lifestyle. We believe the study findings will contribute to the current multiple health behaviour intervention research and support Chinese cardiac patients to maintain rehabilitation outcomes and cultivate a healthy lifestyle.

4. The project aims, its long-term significance:

(State the aims, identify the key issues and problems being addressed and list the possible outcomes of the research project, as well as its significance and value) (Maximum 600 words or 1 page)

Key issues and problems:

Medical rehabilitation after sever health issues (e.g., cardiovascular diseases such as stroke or orthopedic issues such as a knee replacement) is a crucial component of the recovery process. Patients are physically trained under guidance and prepared for their return to everyday life at rehabilitation discharge. Regular physical activity and healthy dietary plays an irreplaceable role in this process to get the patients to adopt a healthy lifestyle and maintain their treatment success with the aim of becoming resilient and being able to return to work (Russell & Bray, 2009; Xie et al., 2016;). However, the significant contribution of rehabilitation depends mainly on its successful implementation in daily life after the formal rehabilitation process. Literature reviews show that it is often difficult for patients to integrate the learning outcomes from rehabilitation into their daily life (e.g., Li & Shao, 2017). Especially in China, because of the limitation of rehabilitation aftercare, many family-based health care offers are inaccessible to patients, especially those who live in decentralized residential areas, which subsequently aggravate the difficulties for cardiac patients to maintain the treatment success and transfer the learning outcomes of clinical rehabilitation. Therefore, the present study suggests that aftercare which the patients can follow at home (e.g., website plus SMS and Wechat prompts) should be offered (Kordy, Theis, & Wolf, 2011; Yan, Yang, & Nong, 2017).

This study aims to examine the efficacy of an 8-week e-health intervention on physical activity (PA) and fruit and vegetable intake (FVI) in Chinese cardiac patients. In addition, this study will detect why the intervention is effective and to identify the social-cognitive variables that may account for adopting a healthy lifestyle.

The possible outcomes of the research project are to provide knowledge on:

1. Participants in the intervention group (IG) increase their PA levels and FVI portion in comparison with a control group.
2. Participants in the intervention group (IG) improve their social-cognitive variables of PA and FVI in comparison with a control group.
3. Participants in the intervention group (IG) enhance their mental health outcomes in terms of quality of life and depression level in comparison with a control group.
4. The social-cognitive variables of PA and FVI mediate the association between intervention and adopting a healthy lifestyle.

Long-term significance:

This study will make a significant contribution with new insights toward the current multiple

health behaviour intervention in rehabilitation aftercare in China. By using innovative theory-based e-health learning technology, the tailored intervention program can help cardiac patients form healthy lifestyle habit in daily life.

In addition, this study will apply the Health Action Process Approach (HAPA; Schwarzer, 2008) model, which has been proved to be applicable to diverse participants in different health behaviour, so that contribution can be made to the development of the HAPA model in health behaviour research among Chinese cardiac patients.

To our knowledge, very few studies have provided evidence for detecting the psychological mechanism of multiple health behaviours change among Chinese population. This study will explore whether the social-cognitive variables of PA and FVI can be mediators of intervention and adopting a healthy lifestyle.

5. Objectives (State the objectives in point form):

Objective 1: To examine the efficacy of an e-health intervention on single behaviour indicator (PA and FVI) and adoption of a healthy lifestyle (the synthesis of both behaviours) in comparison with a control group.

Objective 2: To examine the efficacy of an e-health intervention on social-cognitive variables of PA and FVI (self-efficacy, intention, action and coping planning, social support) in comparison with a control group.

Objective 3: To examine the efficacy of an e-health intervention on mental health outcomes, including perceived quality of life, and depression level in comparison with a control group.

Objective 4: To examine whether there are mediation effects of social-cognitive variables of PA and FVI on adopting a healthy lifestyle.

6. **Background of research, research plan and methodology:** : (Maximum 6 pages, excluding references)

[Summary of related work that has already been done and an outline of previous and alternative approaches to the problem -

(a) By others (give key references)
(b) By the investigator(s) (give key references)
(c) Progress report (for on-going projects)]

[Explain, in terms of the educated layman, the novel idea which you will be introducing to tackle the problem in question. Please include key references. Attach a draft questionnaire should the research plan involve a survey/interview.]

Background of research

(a) Work done by others

This study will apply the Health Action Process Approach (HAPA; Schwarzer, 2008) as the theoretical backdrop, which suggests there are two distinctive phases during the health behaviour change process. First is the motivation phase, which plays an important role before a goal is set. Subsequently individuals enter the volitional phases. This distinction allows the tailored intervention to the variables which correspond to a specific process. In particular, the motivation must occur before individuals change their unhealthy habits. Therefore, individuals may benefit most from interventions that will increase risk perception, self-efficacy, and the positive outcome expectancies (Schwarzer, Cao, & Lippke, 2010). The purpose is to lead towards a specific intention (e.g., "I intend to eat some fruit and vegetables today") and once they forming the intention, individuals enter into volition processes. People benefit the most from planning interventions, which can be the bridge from intention to behaviour (Reinwand et al., 2016). At this process, individuals will learn to make specific plans (e.g., when, where and how to eat fruit and vegetables), determine priorities, and to translate their action plans into behaviour. Self-regulatory skills are necessary to maintain their progress once people start to initiate a healthy behaviour. Positive behaviour change will be guided by self-efficacy, as this regulates how much effort is invested in goal achievement and how much persistence is maintained if obstacles and setbacks occur. Additionally, promoting perceived social support from people's social context is equally important in preventing relapse (Schwarzer, 2008; Figure 1).

Considerable evidence has proved the effectiveness of interventions based on the HAPA model in improving PA (Schwarzer, Lippke, & Ziegelmann, 2008), healthy diets (Wiedemann et al., 2008), and other health behaviours (e.g., Payaprom, Bennett, Alabaster, &Tantipong, 2011).

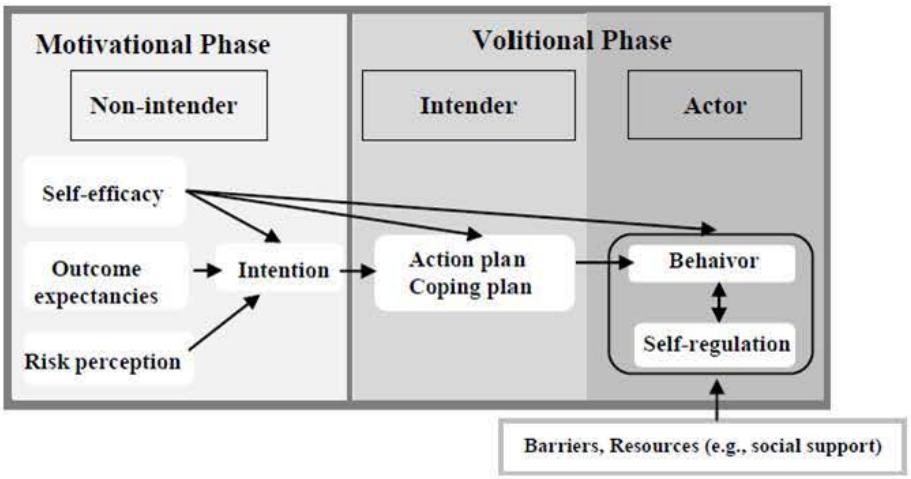

Figure 1: The Health Action Process Approach (HAPA; Schwarzer, 2008)

During the past two decades, multiple health behaviour interventions have become more plausible. Previous studies indicate that interventions implementing on both PA and healthy diet behaviour can be effective for cardiac patients (Liang, Duan et al., 2017; Storm et al., 2016). However, one major question needs to be tackled with is how best to achieve multiple health behaviour change, including whether to intervene sequentially or simultaneously. Many studies have conducted sequential approach on PA and dietary behaviour and found mixed outcomes (Duan et al., 2017; Fleig et al., 2014; Storm et al., 2016). On the contrary, one view points out that PA and dietary

behavior are all health–enhancing behaviours and they are closely correlated. As such there might be additive or synergistic when intervening simultaneously (Atkins & Clancy, 2004). Meanwhile, the simultaneous approach is suggested to be time and cost-effective (Prochaska et al., 2010). Some studies have found support for the simultaneous approach (e.g., Kypri & McAnally, 2005). However, there is still limited evidence regarding the efficacy of an intervention with simultaneous approach to improve PA and healthy dietary behaviour in Chinese cardiac patients.

In addition, employing the internet technology to deliver intervention of multiple health behaviour promotion has a number of advantages (Webb et al., 2010). In particular, the internet intervention can (a) be delivered to large numbers of people at a low cost, (b) ensure that the intervention is accessible at any time and any location, and (c) provide follow-ups and feedback with personalized methods. Furthermore, the use of internet technology has become increasingly prevalent in rehabilitation aftercare (Reinwand et al., 2016; Widmer et al., 2014). A meta-analysis by Webb et al. (2010) indicated that online interventions targeting multiple behaviours had a small but significant effect size (d+= 0.12, k = 10, 95% CI 0.08 to 0.17) on behaviours. Meanwhile, this study also pointed out that additional short message service (SMS) periodic prompts may improve the efficacy of e-health interventions (Webb et al., 2010). Moreover, as a prevalent social media for the Chinese population, the *Wechat* has been also applied in the rehabilitation of patients with lumbar disc herniation (Gao et al., 2017).

(b) Work done by the investigators

On the basis of the HAPA model, a series of e-health intervention have been conducted by the investigators. As a Co-I, Lippke et al. developed an 8-week web-based intervention on PA and fruit and vegetable intake (FVI) towards population with lower cardiovascular risk in German and Dutch (Reinwand, Kuhlmann, Wienert, de Vries & Lippke, 2013). The intervention effects have been well supported (Storm et al., 2016; Reinwand et al., 2016).

The principal investigator (PI) of this project has been collaborating with Lippke to design tailored 8-week e-health intervention programmes in Chinese samples since 2014. With the support of university grants, the PI has completed some pilot work on this intervention program in Chinese university students and Chinese cardiac rehabilitation outpatients. In particular, 1) to design the tailored Chinese intervention materials (e.g., information about the benefits of PA and FVI, prompts to promote explicit goal setting, and feedback provided on participants' performance); 2) to validate the intervention materials with regard to the understanding in Chinese samples; 3) to build an 8-week explicit intervention website module (sequentially PA in week 1-4, and FVI in week 5-8); 4) to refine and optimize the website functions by implementing online tests with a small sample size. Based on the preparation work above, the PI conducted two e-health intervention studies. Regarding the university students, the intervention effects on PA and FVI are supportive (Duan et al., 2017). In terms of the cardiac rehabilitation patients, manuscript writing is in progress (Duan et al., under preparation). Results of this study indicated that time by group interaction effects were significant both in PA (Eta^2=.14, p<.01) and FVI (Eta^2=.43, p<.001). Moreover, all psychosocial variables for PA and FVI showed superior intervention effects with an effect size of Eta^2 ranging from .09 to .23. With the help of e-health learning program, patients were about 1.7 times more likely to practice or maintain a healthy lifestyle in comparison with patients in a control condition (OR= 1.68, 95%CI= 1.94-2.35, p< .01). Findings in this pilot study indicate the overall effects of a web-based PA and FVI intervention in Chinese cardiac patients. In addition,

measurement tools and web-based intervention materials used in this pilot study provide the foundation for further intervention study.
However, based on the previous literature review, there is still limited evidence regarding the web-based intervention with simultaneous approach to improve PA and healthy dietary behavior in Chinese cardiac patients (Wu & Li, 2017). In addition, the psychological mechanism of health behavior change has not been addressed in the previous study among Chinese cardiac patients (Duan et al., 2017). Thus, this study attempts to fill the research gap and provide empirical evidence for these aforementioned issues.

Methodology

Participants:

All rehabilitation participants (≥18 years) who have no contraindication with respect to PA or FVI will be eligible to participate in the study. In particular, participants must meet the inclusion criteria of (1) no restriction of physical mobility under the cardiac function at entry; and (2) no restriction of relevant disease such as diabetes or fruit allergies. As the study involves an online website and mobile phone SMS, only participants with access to the Internet via mobile phone will be enrolled.
Patients will be recruited from one outpatient cardiac rehabilitation centre in Guangdong General Hospital, Guangzhou, China. For the main study, the sample size will be estimated by using G*Power 3.1 software with MANOVA of repeated measures approach. For achieving medium effect size of 0.25 (Duan et al., 2017), with a power (1-β) of 0.8 and alpha of 0.05, the total sample size will be 116. Assuming a dropout rate of approximately 30%, a total of 166 participants will be required for the study evaluation.

Procedure:

(1) Validation stage. There are 4 steps need to be implemented before conducting main study. Step 1: based on the established intervention materials with sequential intervention mode in previous study (Duan et al., 2017), investigators will work out a new intervention protocol corresponding to simultaneous intervention mode (PA + FVI in week 1-8); Step 2: to refine and adjust the language of intervention materials based on the feedback of patients participating in the previous study to make the information more understandable and acceptable; Step 3: to develop two website modules for intervention group and wait list control group; Step 4: to evaluate website module functions by conducting online tests with a small sample size.
(2) Main study stage. Participants who will receive outpatient rehabilitation will be informed about the purpose of study by their physicians with relevant information materials. Upon patients show their interest and consent, they will sign study consent inform and be invited to finish the online registration within one week (T0). Afterwards, patients will be randomly assigned into one of two groups. (1) Intervention group (IG): simultaneously, both PA and FVI for 8 week; and (2) the waiting control group (WCG): patients will not receive any support programme during the intervention period but will be provided with the same intervention at follow-up six-month after the intervention.
The data will be collected at the beginning of intervention (T1), at the end of intervention (T2), and at 3-month follow-up (T3). All website hyperlinks for the questionnaire surveys at T1, T2, and T3 as well as for the weekly e-health learning program will be delivered by the researchers to the patients via Wechat platform (a Chinese social media app with multi-functions).

Intervention:

The 8-week e-health intervention will target HAPA-based social-cognitive variables of

PA and FVI. Particularly, Week 1: risk perception and outcome expectancies; Week 2: goal setting; Week 3: development of action plans; Week 4: revision and adjustment of previous action plans; Week 5: development of coping plans; Week 6: revision and adjustment of previous coping plans; Week 7: development of perceived social support; Week 8: revision and adjustment of previous social support. Self-efficacy will be a fixed intervention variable involved from week 2 to week 8. Table 1 indicates intervention variables, intervention goals and intervention content.

Table 1: Variables, goals and content of intervention across 8 weeks

Intervention Variables	Physical Activity + Fruit and Vegetable Intake							
	week 1	week 2	week 3	week 4	week 5	week 6	week 7	week 8
Risk perception	✓							
Outcome expectancies	✓							
Self-efficacy		✓	✓	✓	✓	✓	✓	✓
Goal setting		✓						
Action plans			✓	✓				
Coping plans					✓	✓		
Social support							✓	✓
Intervention goals	1. improving the risk awareness of inactive lifestyle and unhealthy diet 2. stimulating positive outcome expectancies and motivating intention formaion	1. enhancing motivational self-efficacy for PA and FVI 2. setting a general goal of health behavior and forming the intention of PA and FVI	1.setting action plans for PA and FVI 2.boosting motivational self-efficacy for PA and FVI	1.further confirming appropriate action plans for PA and FVI 2.further enhancing motivational self-efficacy for PA and FVI	1.setting coping plans for PA and FVI 2.enhancing self-efficacy on maintainning PA and FVI	1.further confirming appropriate coping plans for PA and FVI 2.further enhancing self-efficacy on maintanance of PA and FVI	1.promoting perceiverd social support on PA and FVI 2.enhancing recovery self-efficacy to prevent unhealthy behaviour replase	1.further promoting perceiverd sccial support on PA and FVI 2.further enhancing recovery self-efficacy to prevent unhealthy behaviour replase
Intervention Content	informing the risk of inactive behaviour and unhealthy diet introducing and promting the benefits of physical activity (PA) and fruit and vegetable intake (FVI).	assessing motivational self-efficacy; encouraging patient to build confidence in PA and FVI setting goals for PA and FVI, as well as general health goal	learning how to make specific action plans for PA and FVI taking examples of sucsseful case about action plan implementation	reviewing the implementation of action plans; adjusting action plans taking examples of sucsseful case about action plan implementation and adjustment	finding difficulties of plan implementation, making coping plan taking examples of sucsseful case about health behaviour adherence	reviewing the implementation of coping plans; adjusting coping plan Take examples of sucsseful case about health behaviour adherence	reviewing perceived social report on PA and FVI taking examples of sucsseful case about behaviour replase prevention	further reviewing perceived social report taking examples of sucsseful case about behaviour replase prevention

Additionally, some behaviour change techniques will be employed in the intervention in order to facilitate the implementation and maintenance of behaviour. For example, two types of feedback will be provided. Participants will receive individualized feedback on their behaviour performance 4 weeks ago, 3 weeks ago, 2 weeks ago and 1 week ago respectively. In addition, normative feedback on the criterion-based behaviour recommendation will be presented as well (e.g., accumulated at least 150 minutes with moderate intensity of PA per week, 5 portions of FVC per day) (see example in Figure 2). Moreover, examples of role models will be provided throughout the intervention to support participants to set goals and develop plans.

In addition to the intervention on web-site, SMS reminder will be sent to participants weekly prior to each intervention program in order to remind patients to attend the weekly intervention (e.g., "Dear patients, the coming learning session will start tomorrow. We kindly remind you to participate in it by clicking the hyperlink showed on the Wechat tomorrow. Have a nice day! "). Sequentially, Wechat message will be sent to participants on the next day for accessing the intervention website (e.g., "Here is the intervention hyperlink for Week two. Please click on it. www.ehealthlearningchina.com/patient/two_b.php".).

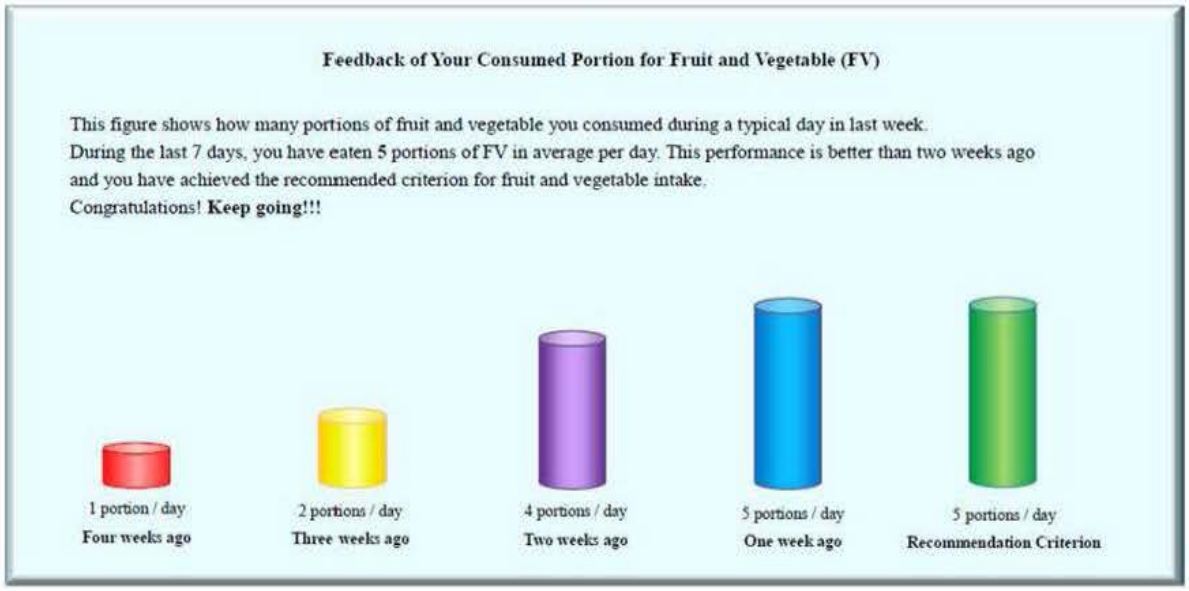

Figure 2: Individualized and normative feedbacks regarding the portion of fruit and vegetable intake in average per day

Measures:

The standardized electronic questionnaires have been validated in the previous pilot study with Chinese cardiac patients (Liang, Duan et al., 2017), which consists of the following four parts.

1. Behaviour indicators

Physical activity (PA): The level of PA will be measured through the short Chinese version of the IPAQ questionnaire (Macfarlane et al., 2007). Participants will be asked to estimate the number of days and hours spent for vigorous, moderate and walking activities during the past week. ***Fruit and vegetable intake (FVI):*** FVI will be measured with four items, including fruit or vegetable juice, fruit, cooked or steamed vegetables, and raw vegetables (Rafferty et al., 2002). Respondents will be asked to count the number of portions of fruit and vegetables they consumed on average during a typical day. ***Combined healthy lifestyle indicator:*** In order to combine two behaviours, PA and FVI will be categorized according to whether or not the participants meet the health recommendations (Lippke, Fleig, Wiedemann, & Schwarzer, 2015). Based on the health guidelines for cardiac patients, the thresholds of 150 minutes PA per week (WHO, 2010) and 5 portions of fruit and vegetables (WHO, 2004) will be chosen. We use 1 and 0 to denote whether participants meet both recommendations or not.

2. Social-cognitive indicators of PA and FVI

Self-efficacy: Self-efficacy will be assessed with three dimensions consisting of motivational, maintenance and recovery self-efficacies with the stem "I am certain that..." followed by 5 items for PA such as "...I can be physically active permanently at a minimum of 5 days a week for 30 minutes even if it is difficult", or followed by 5 items for FVI such as "...I can eat 5 portions of fruit and vegetable a day even if it is difficult." (Cronbach's α for PA= .88; Cronbach's α for FVI= .92) (Luszczynska & Sutton, 2006). ***Intention:*** Intention for PA will be assessed with the stem "I intent to do for at least 30 minutes as day on minimum 5 days a week or at least 150 minutes a week with..." followed by 3 items such as "... vigorous sport", "...moderate PA" and "...mild PA". Intention for FVI will be measured by the stem " I seriously intend to..." followed by 3 items such as "eat at least 5 servings of fruit and vegetable each day"

and "… drink each day at least one glass of fruit or vegetable juice" (Cronbach's α for PA= 0.34; Cronbach's α for FVI= 0.73) (Lippke et al., 2009). ***Planning:*** Planning indicator will be assessed with 6 items, consisting of action planning and coping planning with 3 items for each dimension. The item of action planning for PA will be asked such as "…which concreted PA I will pursue", for FVI such as "…how I will prepare the food" (Cronbach's α for PA= 0.86; Cronbach's α for FVI= 0.91). The items of coping planning for PA will be asked such as "…how I can stay active, even if something happened", for FVI such as "what I can do in difficult situations, in order to remain true to my own resolutions" (Cronbach's α for PA= 0.87; Cronbach's α for FVI= 0.93) (Schwarzer, 2008). ***Social support:*** This scale will be measured with the stem as "How do you perceived your environment?" followed by 3 items for PA such as "….People like my friends help me to stay physically active", or followed by 3 items for FVI such as "…People like my friends help me to eat healthily" (Cronbach's α for PA= 0.72; Cronbach's α for FVI= 0.69) (Jackson, Lippke & Gray, 2011).

3. Variables related to mental health status

Perceived Quality of life: This indicator will be assessed by using the short version of WHO Quality of Life-BREF (WHO, 1993). Respondents will be firstly asked about their general quality of life as "How would you rate your quality of life?", then 7 items in physical health subdomain will be used, such as the example item "To what extent do you feel that physical pain prevents you from doing what you need to do?" (Cronbach's α = 0.89). ***Depression:*** Level of depression will be measured with the use of the Center for Epidemiologic Studies Short Depression Scale (CES-D 10) (Andersen et al., 1994). Respondents will be asked with the stem as "In the past week how often I feel …" followed by 10 items such as "…I was bothered by things that usually don't bother me" (Cronbach's α = 0.74).

4. Sociodemographic information

Gender, age, marital status, education level, rehabilitation treatment history, current work status, self-reported height and weight.

Statistical analysis:

All data will be analyzed by using SPSS 23.0 software. Independent samples t-tests and Chi^2-tests will be adopted to examine the characteristics of drop out and compare the differences of baseline data at T1. Statistical significance will be set at 5% level (two-tailed).

The intervention effects on behavioural, social-cognitive and mental health status related indicators will be test by conducting multivariate analysis of variance (MANOVA) with repeated measures, with time (T1, T2 and T3) as with-in subjects factor and group (IG and CG) as between-subjects factor. Missing data will be imputed within each measurement point in time using the Expectation-Maximization (EM) method.

Furthermore, the intervention effect on healthy lifestyle indicator will be examined by performing a multinomial logistic regression model. The multiple-mediator model will be conducted to test the mediation effects with the use of SPSS macro (Preacher & Hayes, 2008).

Research Schedule:

Month 1-4: Refinement and adjustment of questionnaires and intervention materials; Website set-up and function test

Month 5-12: Recruitment of participants; Implementation of main study

Month 13-16: Data analysis; Report writing; Dissemination of research finding

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***Dear participants**:*

Hello !

The aim of our questionnaire survey is to learn about your health status and some influential factors related to rehabilitation exercise and fruit and vegetable intake behaviour. There are no right or wrong in your answers, so ***please answer truthfully.***

The following questionnaires contain four parts. (1) Physical activity behaviour and relevant factors; (2) fruit and vegetable intake behaviour and relevant factors; (3) variables related to health status; (4) demographic factors.

Please read items carefully before replying.

Your personal information and data will be used only for study purpose. However, as the data will be collected on the internet, we cannot guarantee confidentiality.

Thank you for your cooperation!

Part I Physical Activity Behaviour and Relevant Factors

1. Physical activity behaviour

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at campus, such as, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the vigorous activities that you did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

(1). During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

_____ days

❑ No vigorous physical activities

(2). How much time did you usually spend doing vigorous physical activities on one of those days?

_____ hours per day

_____ minutes per day

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

(1). During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

_____ days

❑No moderate physical activities

(2). How much time did you usually spend doing moderate physical activities on one of those days?

_____ hours per day

_____ minutes per day

Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

(1). During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

_____ days

❑No walking

(2). How much time did you usually spend walking on one of those days?

_____ hours per day

_____ minutes per day

Which intentions do you have for the near future?

I intent to do for at least 20 minutes a day on minimum 2 days a week (or at least 40 minutes a week)…

		not true			exactly true
1.	… perform strenuous physical activity (heart beats faster, sweating)	❑1	❑2	❑3	❑4
2.	… be moderately physically active (not fatiguing, mild sweating)	❑1	❑2	❑3	❑4
3.	… be mildly physically active (hardly strenuous, no sweating)	❑1	❑2	❑3	❑4

3. Plans of physical activity

For the next month I already planned in detail …

		Totally disagree				Totally agree
1.	… which concrete physical activity I will pursue (e.g. walking).	❑1	❑2	❑3	❑4	❑5
2.	… where I will be physically active (e.g. in the park).	❑1	❑2	❑3	❑4	❑5
3.	… on which days I will be physically active (e.g. every Tuesday and Friday).	❑1	❑2	❑3	❑4	❑5
4.	… when I have to be especially cautious not to stop being active.	❑1	❑2	❑3	❑4	❑5
5.	…what I can do in difficult situations, in order to remain true to my own resolutions	❑1	❑2	❑3	❑4	❑5
6.	…how I can stay active, even if something happened	❑1	❑2	❑3	❑4	❑5

4. Perceived Social Support of physical activity

		not true			exactly true
1.	My partner supports me to stay physically active	❑1	❑2	❑3	❑4
2.	People from my family supports me to stay physically active	❑1	❑2	❑3	❑4
3.	People like my friends helps me to stay physically active	❑1	❑2	❑3	❑4

5. Self-efficacy of physical activity

The followed questions will ask about your confidence in PA

I feel certain that I can again be physically active a minimum of 5 days a week for 30 minutes:	**Totally disagree**				**Totally agree**
1. … even if it is difficult.	❑1	❑2	❑3	❑4	❑5
I feel certain that I can be physically active permanently a minimum of 5 days a week for 30 minutes:	**Totally disagree**				**Totally agree**
2. … even if it takes a lot of time till I am used to it.	❑1	❑2	❑3	❑4	❑5
3. … even if I have worries and problems (e.g. schedule difficulties).	❑1	❑2	❑3	❑4	❑5
I feel certain that I can again be physically active a minimum of 5 days a week for 30 minutes:	**Totally disagree**				**Totally agree**
4. … even if I changed my concrete plans several times.	❑1	❑2	❑3	❑4	❑5
5. … even if I skipped a few times.	❑1	❑2	❑3	❑4	❑5

Part II Fruit and Vegetable Intake(FVI) Behaviour and Relevant Factors

1. FVI behaviour

During the last 7 days, how many portions of fruit and vegetable have you eaten in average per day?

(1) Raw vegetables

(0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 or above)

Example for one portion of raw vegetable

(2) Fruits

(0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 or above)

"One portion of fruit" is equal to:

- Two small size fruits（e.g., actinidia, plum）
- One medium size fruit（e.g., orange， apple，banana）
- Half of big size fruit（e.g., Pomelo）
- A handful of other kinds of fruits（e.g., grape， strawberry). See the picture below.

(3) Fruit/Vegetable Juice

(0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 or above)

Examples for one cup/portion of juice

(4) Cooked or steamed vegetables

(0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 or above)

Examples for one portion of cooked or steamed vegetable

2. Intention of FVI behaviour

Which intentions do you have for the near future? I seriously intent to, …

		not true			exactly true
1.	… eat at least 5 portions of fruit and vegetable daily .	❑1	❑2	❑3	❑4
2.	… eat fruit and vegetable at every meal.	❑1	❑2	❑3	❑4
3.	… drinking each day at least one glass of fruit- or vegetable juice	❑1	❑2	❑3	❑4

3. Plans of FVI behaviour

For the next month I already planned in detail, …

		Totally disagree				Totally agree
1.	… what I will eat (e.g. cereals, fruits).	❑1	❑2	❑3	❑4	❑5
2.	… at which meals I will eat fruits and vegetables (e.g. additional salad).	❑1	❑2	❑3	❑4	❑5
3.	… how I will prepare the food.	❑1	❑2	❑3	❑4	❑5
4.	… when I have to pay attention not to fall into old eating habits	❑1	❑2	❑3	❑4	❑5
5.	… what I can do in difficult situations, in order to remain true to my own resolutions	❑1	❑2	❑3	❑4	❑5
6.	… how I can eat healthy, even if something happened	❑1	❑2	❑3	❑4	❑5

4. Perceived social support of FVI behaviour

How do you perceive your environment?

		not true			exactly true
1.	My partner supports me to eat healthy	❑1	❑2	❑3	❑4
2.	People from my family supports me to eat healthy	❑1	❑2	❑3	❑4
3.	People like my friends help me to eat healthy	❑1	❑2	❑3	❑4

5. Self-efficacy of FVI behaviour

	I feel certain that I can eat at least 5 portions of fruit and vegetable a day:	**Totally disagree**				**Totally agree**
1.	… even if it is difficult.	❑1	❑2	❑3	❑4	❑5
	I feel certain that I can permanently eat 5 portions of fruit and vegetable a day:	**Totally disagree**				**Totally agree**
2.	… even if it takes a lot of time till I am used to it.	❑1	❑2	❑3	❑4	❑5
3.	… even if I have worries and problems (e.g. schedule difficulties).	❑1	❑2	❑3	❑4	❑5
	I feel certain that I can again eat 5 portions of fruit and vegetable a day:	**Totally disagree**				**Totally agree**
4.	… even if I changed my concrete plans several times.	❑1	❑2	❑3	❑4	❑5
5.	… even if I skipped a few times.	❑1	❑2	❑3	❑4	❑5

1. WHOQOL-BREF (general quality of life + physical domain)

	Very poor				**Very good**
(1) How would you rate your quality of life?	❑1	❑2	❑3	❑4	❑5
The following questions ask about how much you have experienced certain things in the last four weeks.	**Not at all**				**An extreme amount**
(2) To what extent do you fell that physical pain prevents you from doing what you need to do?	❑1	❑2	❑3	❑4	❑5
(3) How much do you need any medical treatment to function in you daily life?	❑1	❑2	❑3	❑4	❑5
The following question asks about how completely you experience or were able to do certain things in the last four weeks.	**Not at all**				**An extreme amount**
(4) Do you have enough energy for everyday life?	❑1	❑2	❑3	❑4	❑5
	Very poor				**Very good**
(5) How well are you able to get around?	❑1	❑2	❑3	❑4	❑5
	Very dissatisfied				**Very satisfied**
(6) How satisfied are you with your sleep?	❑1	❑2	❑3	❑4	❑5
(7) How satisfied are you with your ability to perform your daily living activities?	❑1	❑2	❑3	❑4	❑5
(8) How satisfied are you with your capacity to work?	❑1	❑2	❑3	❑4	❑5

2. Depression CES-D 10

For each of the following statements, please check the box that best describes how often you felt or behaved this way during the past week

		Rarely or none of the time(less than one day)	**Some or a little of the time(1-2days)**	**Occasionally or moderate amount of the time(3-4days)**	**Most or all of the time(5-7 days)**
1.	I was bothering by things that usually don't bother me	❑1	❑2	❑3	❑4
2.	I had trouble keeping my mind on what I was doing	❑1	❑2	❑3	❑4
3.	I felt depressed	❑1	❑2	❑3	❑4
4.	I felt that everything I did was an effort	❑1	❑2	❑3	❑4
5.	I felt hopeful about the future	❑1	❑2	❑3	❑4
6.	I felt fearful	❑1	❑2	❑3	❑4

7.	My sleep was restless	❑1	❑2	❑3	❑4
8.	I felt happy	❑1	❑2	❑3	❑4
9.	I felt lonely	❑1	❑2	❑3	❑4
10.	I could not get"going"	❑1	❑2	❑3	❑4

Part IV Demographic factors

1. Name:_____
2. Please indicate your sex: male/female
3. How old are you? _____
4. Your mobile phone No.:_____
5. Which of the following heart diseases have been treated during rehabilitation? (Please indicate)
   - Acute Coronary Syndrome (ACS)
   - Myocardial infarction
   - Angina Pectoris
   - Coronary infarction
   - Bypass
   - balloon dilatation (percutaneous transluminale coronary angioplasties)
   - Others: _____
6. Where do you live currently (city/ district)? _____
7. Please indicate your marital status
   - Single
   - Close relationship, not living together
   - Close relationship, living together
   - Marital partnership/Common law marriage
   - Divorced
   - Widowed
8. Please indicate if you have children
   - Yes
   - No

   If yes, how many? _____
9. Please indicate your highest school graduation
   - I do not have any school graduation (yet)
   - Primary school graduation
   - Secondary school graduation
   - High school graduation
   - Junior college graduation
   - University graduation or above
   - Other: _____
10. Please indicate your current work status
    - Employed, fulltime
    - Employed, part-time
    - In training
    - Unemployed/searching job
    - In pension

- Housewife/Househusband
- Other: _____

11. Please indicate if you already returned to work
    - Yes
    - No

If yes, how many weeks have passed since rehabilitation until you returned to work? _____ weeks

Other:

Your body height is: _____ cm

Your body weight is: _____ kg

7. Expected duration : 16 **months** (max 24 months)

Proposed starting date: 1 Jul 2018 Expected completion date: 31 Oct 2019

8. Estimated cost of the whole project (in Hong Kong dollars):

(Please also observe the Panel Houserules while preparing the budget: http://gs.hkbu.edu.hk/en/home/download/for_staff/)

(Panels can at their discretion fund exceptionally high quality Category II proposals up to a funding limit of HK$180,000. For budget request that is greater than $150,000, please project justifications under 9(d) below.)

				Year 1	Year 2	Total
(a)	Staff* Rank	Salary per month	No. of Months			
	Research Assistant X 1	$12,960	4.0	$51,840.0	$0.0	$51,840.0
(b)	Equipment (please itemise and **include cost of computing equipment in the budget total**)					
(c)	General Expenses** (please itemise)					
	(1) Website set-up			$65,000	$0	
	(2) Participant fee			$10,790	$0	
	(3) Promotion materials			$280	$0	
	(4) Transportation and accommodation expenses			$2,920	$0	
	(5) Nurse helper			$9,170	$0	$88,160
(d)	Conference / Publication** (see Note)					
	Health and exercise psychology related confere			$10,000	$0	$10,000

	Total***:	$150,000.0	$0.0	$150,000.0

* FRG normally supports research support staff at the Research Assistant level.

** PI should include the cost for the medical surveillance programme for research personnel that would involve the use of organophosphate and 2,3,7-8 TCDD as well as other highly toxic chemicals suggested by the Laboratory Safety Sub-Committee. For programme details, please contact the EHSU of the Estates Office.

*** Should there any other research funds that have already been obtained for this project, such amount will be deducted from the total cost of the FRG (Item 10-11 refers).

Note: With effect from the 2011/2012 academic year, FRG supports conference and publication charges up to $10,000 for PI to attend recognized international conference and to disseminate the research results.

9. (a) Justifications for each category/item of the budget in Item 8 above:

(Regarding 8(a), list the duties and time involved for the research support staff required. Also list the division of work / duties between the PI and the research support staff).

Staff Cost:

A full-time research assistant will be employed for 4 months. S/he will assist website set-up and function test, main study implementation, data management and analysis, and report writing.

Equipment Cost:

Nil.

General Expenses:

(1) An e-health learning website will be set up by an IT production company in Shenzhen, China. In addition, the SMS group message service will be included in this website platform.

(2) Participants will be rewarded HK$65 (RMB50) cash if they complete all data collection at three time measurement points.

(3) For participant recruitment, flyer will be made and distributed to patients at hospital. The content of flyer will introduce the e-health program.

(4) PI will visit hospital for study promotion twice in total. The transportation fee will be 500 (round trip) HKD x 2= 1,000 HKD; the accommodation fee will be 480HKD x 2 (nights) x 2 = 1,920 HKD.

(5) After communicated with the director of cardiac rehabilitation center who is also the co-investigator of this project, a nurse helper in Guangdong General Hospital will be employed

for 7 months in this study with in total payment of HK$9,170 (7 months x HK$ 1310/month). She will assist with recruitment of patients in hospital, and motivate patients to attend the weekly intervention session and complete online questionnaire survey.

Conference and Publication Cost :

This research topic is very popular in the field of health promotion. The investigators would like to attend an international conference to disseminate the research results. In addition, for publishing a journal paper, language editing fee or publication fee will be chargeable.

9. (b)(i). Declaration on the Equipment Procurement:

☑ I declare that no equipment is required; OR

☐ I declare that the equipment indicated in 8(b) above is not available in the department/faculty; OR

☐ I declare that all or some of the equipment (please provide details in the following text box) indicated in 8(b) above is available in the department/faculty but cannot be used by me in view of the following reasons (max 500 words):

9. (b)(ii). Declaration on the Equipment Procurement:

☑ I declare that no research-related software licence / dataset is required; OR

☐ I declare that the research-related software licence / dataset indicated in 8(c) above is not available in the department/faculty; OR

☐ I declare that all or some of the research-related software licence / dataset (please provide details in the following text box) indicated in 8(c) above is available in the department/faculty but cannot be used by me in view of the following reasons (max 500 words):

9. (c) Facilities and major equipment already available in addition to those requested in Item 8(b)

A work station, with a computer set will be provided to Research Assistant. No extra equipment will be needed in this project.

9. (d) Justifications for requesting budget greater than $150,000 for exceptionally high quality Category II proposals (up to a funding limit of $180,000)

Nil.

10. Other research funds that have already been obtained from other sources for this project (if any):

(Please give source(s) of funding and amount. This amount will be deducted from the total cost of the project in Item 8 above)

(Please give source(s) of funding and amount.)

11. Allocation for Faculty Research Grant Requested:

(Item 11 = Item 8 - Item 10)

$ 150,000

12. Have funds been sought previously for the same or similar project(s)? If so, please state:

Organisation/ Committee applied to:	
Project Code:	
Project Title: (if different from item 1 above)	
Date of Application:	
Outcome:	

NOTE: If this proposal is similar to a proposal that has been submitted to the RC (including previous round of FRG)/RGC or other funding bodies, please revisit the main concerns/suggestions previously expressed by the internal and/or external reviewers. Explain whether and if so what changes have been incorporated in the current proposal.

Main concerns/suggestions previously expressed by the external reviewers

Changes incorporated in the current proposal

13. Please indicate whether this application has previously been submitted to the Research Grants Council (RGC), i.e. a General Research Fund (GRF) application: (where appropriate)

- ☑ (i) Current application is a project independent of the GRF;
- ☐ (ii) Current application is a pilot study in preparation for the GRF;
- ☐ (iii) Current application forms part of the GRF and the application is seeking seed funding for the GRF;
- ☐ (iv) Current application serves to seek top-up funding for awarded GRF. *(please give the following project details)*

(a) Original Requested Amount of GRF Project:

(b) Approved Amount of GRF Project:

(c) Top-up Funding Sought for GRF Project *(this figure should NOT be greater than Item 11)*:

14. Have you submitted any HKBU-endorsed RGC related schemes such as GRF / ECS / CRF / TBRS / AoE / HSSPFS / JRS-ANR / JRS-ESRC / JRS-NSFC / JRS-SRFDP / JRS-SFC (or equivalent) proposals as PI in the immediate past year? If no, please note the "Variable Quota for FRG Projects" to see whether you are eligible for FRG application.

Submission(s) in last academic year

Scheme	Ref No	Grant Title
GRF	12100317	The effect of sequential and simultaneous web-based interventions on the physical activity and fruit and vegetable intake of Chinese university students
JRS-GER	G-HKBU202/17	Evaluation of the Attractiveness of Urban Parks for Fitness-related Physical Activity among the Elderly: A Comparison Study in Hong Kong and Leipzig

15. Number of On-going FRG Projects held by the PI in the capacity of PI (Refer to the "Variable Quota System for FRG Projects") (including those of which completion reports have not yet been submitted, where appropriate)

- ☐ 0
- ☑ 1 Project Code: FRG1/17-18/007
- ☐ 2 Project Code:
- ☐ >2 Project Code:

16. Details of on-going research projects (including those of which completion reports have not yet been submitted) funded by whatever sources undertaken by all investigator(s):

Chinese Medicine and Science Panel applicants: Provide also a list of FRG, RGC or other projects which PI **has completed** within the previous 2 years.

Name of investigator(s) (Indicate PI or Co-I)	Project title and project code	Grant & source(s) (HK$)	Starting date	Expected completion date	Amount of time involved (hours/week)
Dr Duan Yanping(PI)	Psychosocial and Behavioral Features of Physical Activity Fluctuators: A Mixed-Methods Study among Office Employees FRG1/17-18/007	$50,000	1 Nov 2017	30 Jun 2018	10
Dr Duan Yanping(PI)	The Contributions of Urban Parks to Physical Activity among the Older Adults: A Comparative Study between Hong Kong and Germany G-HKBU202/15	$50,588	1 Jan 2016		5

17. List of Outstanding FRG (Cat I & II) Completion Reports:

Project Code	Project Title	Starting Date	Completion Date	Report Submission Date (6 months from Completion Date)

18. Plans for collaboration:

(This item should be completed if two or more co-investigators are involved in the project.)

(Indicate the division of work among the PI, co-investigator(s) and research support staff and the amount of time [hours per week] each is expected to spend on this project. The role of each individual should be adequately described).

The PI, Co-Is and research assistant basically work as a team in developing the research plan. However, in carrying out the study, the job specifications for each investigator are as follows:

Dr. Yanping Duan, the PI, would be responsible for overseeing the entire research project, including the formulation of research design, selection and recruitment of subjects, conducting data collection and analyses, writing of the final report, and supervising the research assistant. She is expected to spend an average of 8 hours/week on the project.

Prof. Sonia Lippke, the Co-I, would be contributing her expertise in research design, data statistical analyses and writing of the research report. She is expected to spend an average of 3 hours/week on the project.

Dr. Lan Guo, the Co-I, would be contributing her networking in the recruitment of subjects, validation of intervention materials, as well as data collection. She is expected to spend an average of 3 hours/week on this project.

Mr. Liang Wei, the Co-I, would be contributing to the validation of intervention materials, data collection, and data analysis. He will also assist on writing of the final report. He is expected to spend an average of 8 hours/week on this project.

A full-time research assistant would assist website set-up and function test, main study implementation, data management and analysis, and report writing. She/he is expected to spend an average of 40 hours/week on this project.

19. International Collaboration (applicable to ARTS/SOSC/COMM/BUS/AVA)

For ARTS/SOSC:

Please provide the following supplementary information below:

(a) outline how cross-cultural/non-local collaboration would enhance the quality of research; AND

(b) involve collaboration between an eligible Arts/Social Sciences faculty member and a named co-investigator from outside Hong Kong.

For BUS/COMM/AVA:

Please provide the following supplementary information below:

(a) a description and value of the collaboration;

(b) connection to international institutions;

(c) statement of outcome;

(d) scope or potential for future collaboration; and

(e) brief C.V. of international partners.

N/A

20. Research ethics/safety approval:

Please tick '✓' the appropriate box(es) to indicate approval required, if any, from the Committee on the Use of Human and Animal Subjects in Teaching and Research (HASC).

(If "none" is the response, please indicate also.)

Human Research Ethics	☑
Animal Research Ethics	☐
Biological Safety	☐
Ionizing Radiation Safety	☐
Non-Ionizing Radiation Safety	☐
Chemical Safety	☐
None	☐

* If approval is required, please also submit the HASC application through the RPS via BUniPort (under the same FRG reference no. under "Research Grant & Output" > "My HASC") after filing the FRG application to Graduate School.

*** Please note proposals from ALL Specialist Panels should first seek relevant ethical/safety approval from the HASC before the Panels can make the funding decision.*

21. Curriculum vitae of investigators:

(Please submit a brief CV* for all investigators relevant to the proposed area of research. **- one CV for each separate proposal.**)

* The brief CV should contain the following information only:

(i) education background;

(ii) employment history;

(iii) publication list (for the previous 5 years.)
(**Chinese Medicine & Science Panel applicants** - indicate publications or submitted manuscripts arising from your previous or ongoing projects.) and

(iv) research activities (for the previous 5 years).

*** Please note that an academic must have produced at least one publication/research outputs within the immediate past two years in order to be eligible to apply for FRG projects.*

Contact Address	Telephone No.
Department of Movement and Sport Sciences, Ghent University Ghent, Belgium	+0032 (09) 264 6311 Fax No. E-mail Address Ilse.DeBourdeaudhuij@UGent.be

23. Please advise to what extent this FRG project is related to the key clusters as indicated in the HKBU Institutional Strategic Plan (2018-2028):

Primary Theme Health, and Drug Discovery

Secondary Theme NA

Mutidisciplinary / Interdisciplinary Study? Yes

24. Applicable to Chinese Medicine and Science Specialist Panel (CMSSP) Only - External Funding Requirement

The CMSSP requires all applicants to acquire an external funding that would have to be not less than the total amount of FRG funding the applicant had gained. The CMSSP will screen out those non-compliance applications and may suggest these applicants to apply for Category I as appropriate.

Please provide a list of external funding (e.g. donation, grants etc) that were obtained in the immediate past four years. For newly joined junior academics, please provide a list of external funding that were obtained in the immediate past five years. Newly joined junior academics are defined as follows:

i) the appointment at HKBU is the first destination in their academic career (excluding post-doc appointments); and ii) they have never applied for GRF grants.

25. Appeal

☑ I understand that the decision of the Specialist Panel is final and no appeal is allowed.