EXERCISE IS MEDICINE® QATAR

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EPIDEMIOLOGY

Physical activity (PA) and structured regular exercise are considered crucial components in health promotion, disease prevention and patient treatment for an enhanced overall quality of life[1-3]. The Eastern Mediterranean region includes countries with some of the world's highest physical inactivity levels. For instance, statistics show that physical inactivity is highly prevalent in Qatar and the countries of the Gulf Co-operation Council (GCC). According to the Qatar National Stepwise Survey 2012, 45.9% of the adult population have a low PA prevalence rate, whereas 31.3% were found to be highly active and 22.8% were moderately active[4]. In addition, it was revealed that in Qatar, deaths due to chronic non-communicable diseases were collectively ranked as the number one cause of death in the past 10 years. Results from the survey also show that 41.4% of the studied population were obese, 21.9% had high blood cholesterol level and 16.7% had diabetes mellitus. Similarly, the first Qatar Active Healthy Kids (QAHK) Report Card, for children and youth, shows that physical inactivity has become an alarming public health concern, with a large portion of the younger generation not meeting daily PA recommendations. Statistics show that 70% of children report long sitting times[5].

DEVELOPMENT OF EXERCISE IS MEDICINE® QATAR

Exercise Is Medicine® Qatar (EIMQ) is a global initiative managed by Aspetar – Orthopaedic and Sports Medicine Hospital, and is considered one of the key components in supporting the objectives of Qatar's National Health Strategy, as well as Aspetar's vision. It was established in 2013 to promote PA as part of disease prevention and treatment methods. EIMQ provides four main initiatives:

1. Exercise interventions in the clinical setting.
2. PA promotion within the community.
3. Training of healthcare providers.
4. Research.

Exercise plays an essential role in combating chronic disease and improving overall quality of life. However, this fact has been neglected in healthcare systems as well as community programmes, which is, in turn, reflected in the health of the Qatari population. Even though physicians, specifically within the primary care sector, advise patients to exercise, they often do not follow the required guidelines nor receive proper training and education on exercise prescription. Accordingly, the National Physical Activity Guidelines (NPAG-Q)[6] were launched in 2014 by EIMQ as a reliable resource for educators, physicians, practitioners and individuals who seek to prescribe PA and exercise, or even those who seek to engage in PA. These guidelines encourage and assist people in adopting a healthier lifestyle. Most importantly, the NPAG-Q assists in the development of individually-tailored exercise prescription

Images: Activities promoting exercise for children at Aspire Zone during the 2017 Qatar National Sports Day.

which includes all health-related components of physical fitness, based on the application of scientific evidence. It also provides basic PA recommendations for condition-specific populations, such as those with hypertension, coronary heart disease, heart failure, diabetes mellitus (type I and II), osteoarthritis and metabolic syndrome. These guidelines, linked with PA promotion tools such as EIMQ, play a key role in increasing the levels of PA and exercise in the country.

On the other hand, even with the presence of PA guidelines and willingness of physicians to prescribe exercise as a remedy for chronic disease, obesity, musculoskeletal disorders, depression, anxiety and other health conditions; time constraints and lack of proper training hinder the application of exercise prescription as part of patient care. EIMQ has recognised this gap in healthcare and addressed the situation through establishing a model for exercise prescription in Qatar. Nevertheless, the challenge lies in delivering a service that meets international standards and the excellent level of care provided by Aspetar as a world-leading orthopaedic and sports medicine facility. Another challenge is providing a culturally appropriate model that can be merged with the existing healthcare systems in the country and the GCC region.

The three guiding principles of EIMQ are:

1. The importance of PA and exercise in health and chronic disease prevention and treatment.
2. Supporting the prescription of both PA and exercise within healthcare settings.
3. Referral of patients to appropriately-trained allied health professionals to deliver exercise treatment services.

The clinic's plan is to establish a strong co-operation with different medical practitioners and allied health professionals to promote public health through accurate medical and fitness assessment, supported by an appropriate exercise prescription. It is worth mentioning that regardless of the condition of patients, the initial aim of EIMQ is to encourage PA and exercise that can be sustained in the long term.

The model was designed to include trained physicians, nurses, nutritionists, exercise physiologists and exercise therapists, and is culturally tailored to match the local patient needs – providing a holistic patient care service. As such, EIMQ's service package covers all requirements for performing safe PA and exercise. Each patient receives a combination of tailored exercise and diet programmes based on his/her specific needs. The service includes:

- Medical examination and counselling
- Blood tests.
- Nutritional counselling and diet plans.
- Fitness assessments and exercise prescriptions.
- Group exercise therapy classes.
- A pedometer-based monitoring programme (*Step Into Health programme, described in the community intervention section below*).

EIMQ adapts the original EIM concept – created by the American College of Sports Medicine (ACSM) and American Medical Association[7] – to include different medical

disciplines working together to create a comprehensive exercise prescription, individually tailored to match each patient's medical and fitness status.

This innovative approach has made EIMQ a distinguished service, where patients undergo various consultations, assessments and evaluations – performed by a multidisciplinary team, who provide the exercise prescription accordingly. It is worth mentioning that EIMQ formed a taskforce committee in 2014, involving different healthcare providers in the introduction of the Physical Activity Vital Sign (PAVS). This was initiated in order to guarantee that every patient's PA level is reported at each visit, which was then incorporated into the nursing vital sign forms (Figure 1).

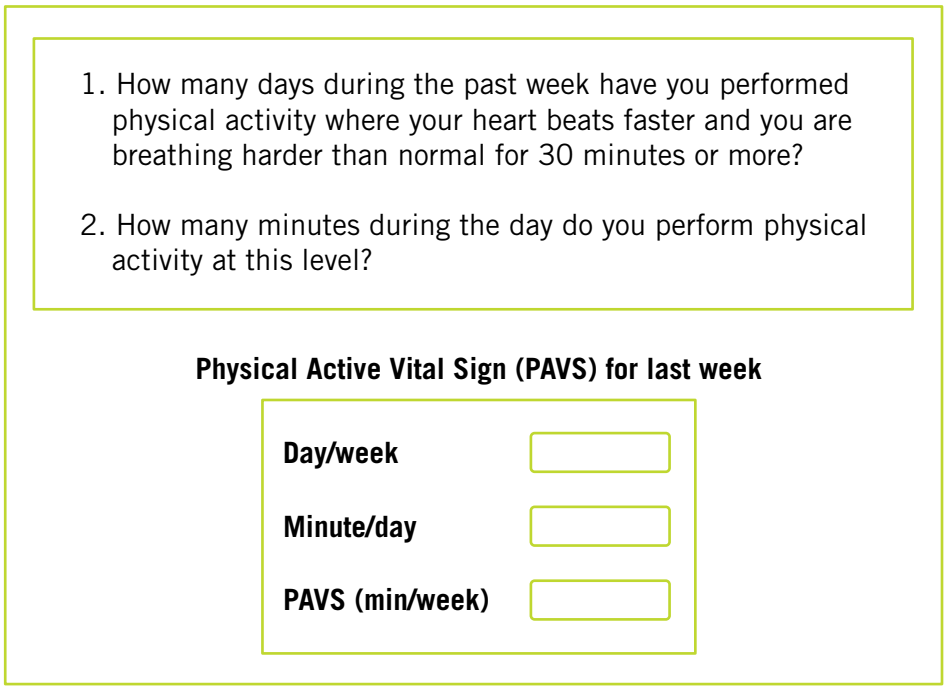

Figure 1: Physical Activity Vital Sign form.

Physicians start the assessment with anthropometric measurements (i.e. *weight, body mass index, waist circumference, blood pressure, body temperature and PAVS*). Then, they review the medical history, perform clinical examination and request lab tests (*complete blood count, serum electrolytes, HbA1C, glucose, liver function, kidney function, Vitamin D and thyroid hormones*). However, some additional tests are further requested based on need (i.e. X-ray, MRI, DEXA scan). Patients then undergo the ACSM risk stratification[8,9] and are assigned to either low-, moderate- or high-risk groups (Table 1). This stratification is based on certain risk factors with their defining criteria as shown in Table 2. According to this classification, patients are individually assigned either home-based, gym-based or supervised exercise (Table 3). Physicians provide the exercise prescription based on FITT principles (Frequency, Intensity, Time and Type) and patients are prepared for the next step. The recommended dose of PA is moderate intensity of 30 minutes daily at least five times per week; or vigorous activity of 20 minutes three times per week. This PA is normally in combination with resistance training, scheduled twice a week.

Table 1

Low-risk	*Asymptomatic men & women who have <2 CVD risk factors*
Moderate-risk	*Asymptomatic men & women who have ≥2 CVD risk factors*
High-risk	*Individuals who have known CVD, pulmonary disease or metabolic disease*

Table 1: The ACSM risk stratification[8]. CVD=cardiovascular disease.

After completing this process, patients are then scheduled for nutritional counselling, provided by EIMQ's trained senior nutritionist. Full-body fat analysis is performed by the nutritionist after reviewing the physician's comments on lab tests, specifically blood glucose, cholesterol levels, blood pressure and body mass index, in addition to other components. The nutritional counselling is mainly based on the assessment of the daily dietary intake of patients, type of food consumed and number of meals per day. EIMQ nutritional counselling provides patients with different dietary options to choose from as well as being designed around culturally-appropriate cuisine. This is important in making it feasible and easier for patients to follow. Furthermore, patients are offered the opportunity to follow up with the nutritionist more frequently, as required. At EIMQ, the nutritionists have also received EIM training on exercise prescription to be integrated with dietary recommendations.

The next step after the nutritional consultation is the exercise physiology assessment, which is performed based on the FITT principles, as mentioned above. Patients are assessed according to their PA status and are provided with a progressive plan to meet the recommended dose of PA (30 minutes/day five times per week, which is equal to 150 minutes/week). They also receive guidance on how to meet these recommendations. A printed exercise programme with visual illustrations is normally provided to patients to help them follow the prescription and recall the assigned exercises (Figure 2). Some patients are advised to do a submaximal bike test based on their diagnoses and risk stratification. All patients are followed up every 3 months to monitor their progress and reassess their condition. Patients who are referred to supervised classes attend two sessions per week for a period of 12 weeks. However, they are also provided with a home-based exercise prescription to complete the required weekly PA dose.

Table 2

Positive risk factors	*Defining criteria*	*Points*
Age	*Men ≥45 years; Women ≥55 years*	*+1*
Family history	*Myocardial infarction, coronary revascularisation or sudden death before 55 years of age in father or other 1st degree male relative; or before 65 years of age in mother or other 1st degree female relative*	*+1*
Cigarette smoking	*Current smoker or those who smoked within last 6 months; or exposure to environmental tobacco smoke*	*+1*
Sedentary lifestyle	*Not participating in at least 30 min of moderate intensity PA on at least 3 days/ week for previous 3 months or longer*	*+1*
Obesity	*BMI ≥30 kg/m²; waist circumference >102cm (40 inches) for men or >88cm (35 inches) for women*	*+1*
Hypertension	*Systolic BP ≥140 mmHg and/or diastolic BP ≥90 mmHg; or currently on antihypertensive medication*	*+1*
Dyslipidaemia	*LDL cholesterol ≥130 mg/dL (3.37 mmol/L); OR HDL cholesterol ≤40 mg/dL (1.04 mmol/L); or currently on lipid lowering medication*	*+1*
Prediabetes	*Fasting plasma glucose ≥100 mg/dL (5.5 mmol/L), but <126 mg/dL (3.37 mmol/L); or impaired glucose tolerance where a 2-hour oral glucose tolerance test value is ≥140 mg/dL (7.70 mmol/L), but ≤200 mg/dL (11.00 mmol/L)*	*+1*
Negative risk factors	***Defining criteria***	***Points***
High HDL cholesterol	*≥60 mg/dL (1.55 mmol/L)*	*-1*
Physically active	*Person participating in regular exercise or meeting the minimum national recommendation for at least 3 months*	*-1*

Table 2: The ACSM risk stratification risk factors and defining criteria[8]. BP=blood pressure, LDL=low-density lipoprotein, HDL=high-density lipoprotein.

EXERCISE IS MEDICINE® QATAR TRAINING PROGRAMME

EIMQ started to build the required clinical skills for delivering the service and enhancing knowledge about exercise prescription with the support of EIM Singapore. At the same time, EIMQ also conducted structured training courses for PA and exercise in cardiovascular disease prevention, to build skills and increase confidence among fitness coaches when dealing with patients and designing supervised classes. In 2015, EIMQ initiated an 'Exercise Is Medicine® certified training course' at Aspetar for all physicians and allied health practitioners in Qatar and the Arabian Gulf region. By the end of 2016, a total of 112 participants from different health disciplines and countries had been trained in the EIM model as displayed in Figure 3.

Table 3

Risk category	*Recommendation for low-moderate intensity physical activity*	*Recommendation for vigorous intensity physical activity*
Low	*Further medical work-up and exercise testing are not necessary*	*Further medical work-up and exercise testing are not necessary*
Moderate	*Further medical work-up and exercise testing are not necessary*	*Further medical work-up and exercise testing are both recommended*
High	*Further medical work-up and exercise testing are both recommended*	*Further medical work-up and exercise testing are both recommended*

Table 3: The ACSM risk stratification and PA recommendation[8].

As mentioned above, the main objective of the EIMQ clinic is to assist those suffering from or at risk of developing physical inactivity-related chronic diseases (such as diabetes, heart disease, hypertension and osteoarthritis) and increase awareness about healthy dietary behaviours. EIMQ is continuing to provide its distinguished avant-garde services at Aspetar and seeking to extend these unique pioneering services into the primary healthcare network in the State of Qatar. This initiative is intended to make exercise an essential part of the chronic disease management plan in both clinical and community settings.

COMMUNITY INTERVENTIONS

Studies show that walking is the most common form of PA which can promote health and well-being among people of different age groups in the community. As such, pedometers are becoming more popular within research and are considered useful tools in monitoring PA levels based on daily steps. Achieving 10,000 steps/day is recognised as an indicator for good health. Step Into Health (SIH) is a dynamic community-based programme initiated by Aspire Zone Foundation and managed by EIMQ at Aspetar. This programme promotes a health behavioural change to increase the engagement of people in Qatar through a self-managed lifelong programme supported by an online database. At the hospital level, SIH supports the EIMQ clinic by monitoring PA levels of patients with osteoarthritis to track their daily step counts through the use of pedometers. At the community level, SIH was found to be effective in promoting PA in Qatar. Daily step goals are encouraging adults to achieve their recommended daily PA level[10]. The number of members registered to the SIH programme reached 43,726 by the beginning of 2017, as displayed in Figure 4.

Moreover, a longitudinal study conducted to assess the status of adult Qatari females' PA level based on their step counts over a period of 1 year found that almost half (44.1%) were classified as sedentary[11,12]. In order to further spread awareness of the importance of PA, seasonal campaigns were developed to engage more people within workplaces and university campuses in Qatar, with institutions holding step count

Figure 2a: Exercise programme sample form.

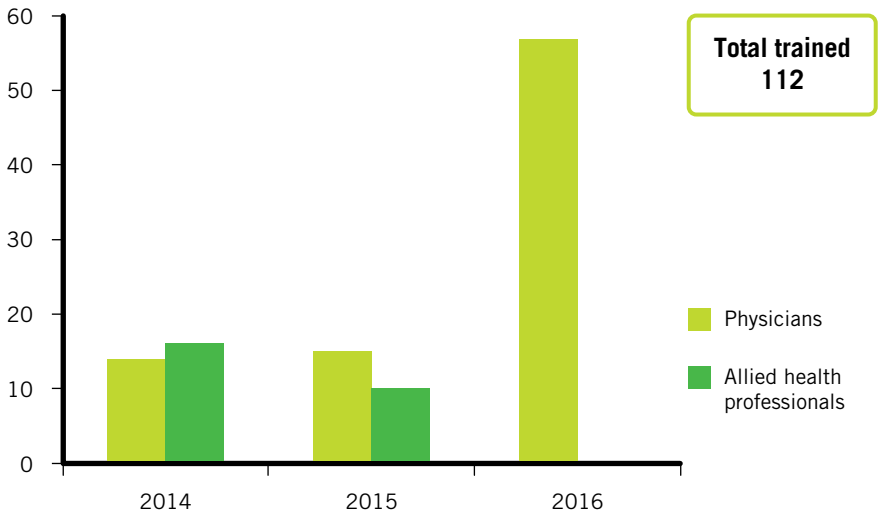

Figure 3: EIMQ Training Courses 2014 to 2016.

Figure 2b: Exercise programme sample form.

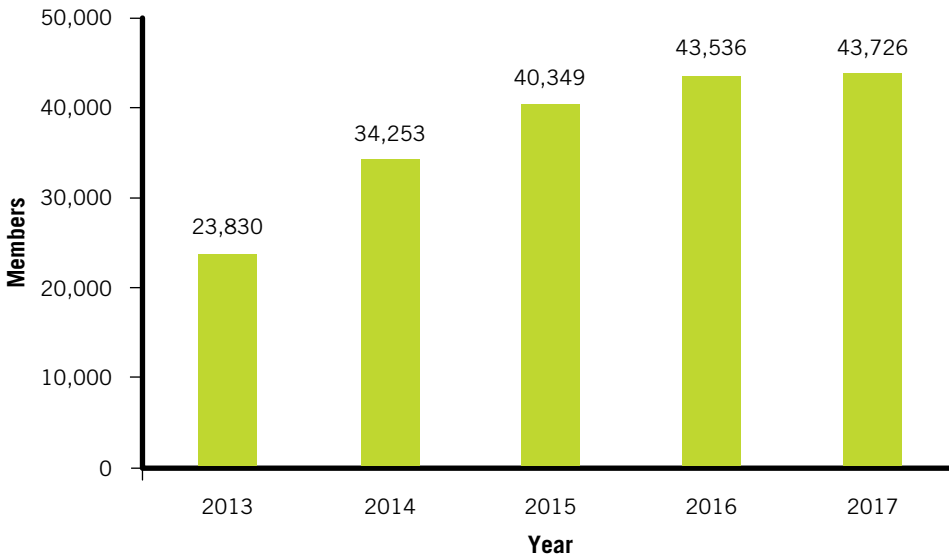

Figure 4: Members registered to Step Into Health between 2013 and 2017.

competitions for employees. In addition, walking routes and clubs were created in malls in Qatar to increase PA levels indoors, especially during summer (when temperatures regularly exceed 40°C) as Qatar experiences large seasonal variations in PA levels, as shown in a study assessing the impact of climatic conditions on PA[13].

The EIMQ department has adopted another initiative to spread awareness and increase the PA levels of children and youth in Qatar. Children are an essential part of the community; their well-being determines the quality life of the coming generations and can help predict future public health challenges for families, communities and healthcare systems. As such, interventions promoting a healthy lifestyle, including PA and dietary habits, should start with the younger generation. It is well known that PA enhances children's health and prevents various diseases that might impact their lives[14]. PA, particularly moderate-to-vigorous physical activity (MVPA), protects from many diseases, including diabetes and cardiovascular disease[15]. Research, surveillance and policy initiatives on PA in children are now advanced in many countries. The first QAHK Report Card was developed between 2015 and 2016, adapted from the Active Healthy Kids Scotland 2013 Report Card[5,16]. The QAHK Report Card is a synthesis of the available evidence on PA in children and youth in the state of Qatar and assessment of the state of the nation. A Working Group identified indicators for PA and related health behaviours and evaluated available data. Weaknesses and gaps in the evidence on PA and health in children and youth in Qatar were identified and will be tackled in future PA advocacy, policy and programme development. Another community programme is Qatar Active Schools (QAS), an evidence-based model to enhance the physical, mental and social development of children in Qatar. QAS aims to incorporate PA into schools and sustain it through partnerships involving the school, family and community. This programme now includes 20 schools from different areas of the country.

Furthermore, as part of community awareness, the '*Namat For a Healthy Life*' magazine is published quarterly by the EIM department at Aspetar[17]. Namat is an

open national and regional public health educational platform, designed for the public and focused on promoting PA as part of a healthy lifestyle in communities. It enhances knowledge about best practice guidelines for physical activity and healthy eating, contributing to a positive lifestyle and behavioural change within the community. The three main objectives of Namat are to:

1. Provide free educational material and learning resources to the public.
2. Provide a web-based resource for professionals in the fields of health, education, sport and research, through sharing information about PA, nutrition and health.
3. Utilise social networking to engage the local community in a range of healthy lifestyle topics, health initiatives and events.

In February 2015, the Namat website won first place in the Gulf Excellence Award for Media, in Riyadh, as the best health web platform.

Finally, the role of EIMQ is of high importance for the community of Qatar. PA is essential for the maintenance and improvement of health-related fitness in addition to functional capabilities. As such, exercise and PA prescription in the clinical setting can help attain substantial health benefits. This cannot be separated from promoting a healthy lifestyle through community interventions – which are also crucial in reducing the burden of non-communicable diseases among the population of Qatar.

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