Outpatient Phase III Cardiac Rehabilitation and the Training System of the Masters of Cardiac Rehabilitation in Japan

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KOHZUKI ET AL.: ***Outpatient Phase III Cardiac Rehabilitation and the Training System of the Masters of Cardiac Rehabilitation in Japan.*** *Cardiac rehabilitation (CR) is an integral component of the continuum of care for patients with cardiovascular diseases. The CR program usually consists of three stages: the acute stage (phase I), subacute stage (stage II) and maintenance stage (phase III). Phase III CR is recognized as a community or home-based program committed to encourage exercise and a healthful lifestyle with the goal of minimizing the risk of recurring cardiac problems (secondary prevention). The Japanese Association of Cardiac Rehabilitation (JACR) established a certification program for the Master of Cardiac Rehabilitation (MCR) to improve quality of cardiac rehabilitation services and to educate the professionals playing a pivotal role in a primary CVD prevention programs in Japan. The number of certified MCR has increased to 1835 by 2008. JACR also established a non-profit organization Japan Heart Club (JHC) in 2004 and started to publish learning materials for health promotion and prevention of CVD. JHC also provides opportunities to participate in CR programs in the community by the activities of "MedEX Club", a multidisciplinary facility provides MCR-supervised exercise sessions, education for patients, and training classes for citizens and health professionals. There are seven MedEx Club branches and 11 classes are being offered nationwide. The MedEx Club can offer convenient, affordable, safe and enjoyable phase III programs and, in the near future, it may be recognized as. a standard model of phase III CR service in Japan. (J HK Coll Cardiol 2008;16 (Suppl 1):A23-A28)*

Cardiac rehabilitation, master, phase III, Japan Heart Club, MedEX Club

摘要

心臟康復是心血管疾病長期治療不可分割的部分。心臟康復療程通常由三個階段組成：急性期（第一期），亞急性期（第二期）和恢復期（第三期）。第三期心臟康復以社區或家庭爲基礎，提倡運動和健康生活方式，從而使心臟病復發的危險性最小化（二級預防）。日本心臟康復協會（JACR）建立了心臟康復碩士的資格培訓計畫，目的在於提高心臟康復醫療品質以及培養在預防原發性心血管疾病中起關鍵作用的專業人員。心臟康復碩士合格人數至２００８年已達1835人。JACR在2004年創立了非盈利組織日本心臟學會（JHC）並出版了關於改善健康狀況及預防心血管疾病的學習資料。JHC也通過MedEX協會提供參加社區心臟康復培訓的機會。MedEX協會是一個提供心臟康復碩士監督課程、患者宣教及市民和健康專業人員培訓等課程的等多學科機構，目前全球有7個MedEX分會和11個班級。MedEX協會提供便捷、經濟、安全而有趣的三期培訓，不久它可能成爲日本第三期心臟康復的標準模式。

關鍵詞：心臟康復　碩士　第三期　日本心臟協會　MedEX協會

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Cardiac Rehabilitation Program As a Lifelong, Multidisciplinary Approach

Over the past two decades, risk factor modification programs for cardiac patients, commonly referred to as cardiac rehabilitation (CR), have evolved into a comprehensive management strategy. The

American Heart Association (AHA) and the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) define CR programs as, "Coordinated, multifaceted interventions designed to optimize a cardiac patient's physical, psychological, and social functioning, in addition to stabilizing, slowing, or even reversing the progression of the underlying atherosclerotic processes, thereby reducing morbidity and mortality".[1]

Core components for CR recommend a multidisciplinary approach to CR consisting of trained and competent staffs which include physician, cardiac specialist nurse, physical therapist, dietician, occupational therapist, administrator, social worker, and so on.[2] The team should also include, where appropriate, pharmacist, physical activity/exercise specialist, and psychologist. The core components of CR are (1) lifestyle management: (physical activity, diet, weight management, and smoking cessation; (2) education; (3) risk factor management; (4) psychosocial counseling; (5) cardio-protective drug therapy and implantable devices; and (6) long-term management strategy. The content of these components should be developed collaboratively by the core CR team and should be delivered by competent, appropriately skilled professionals.

The CR program usually consists of three stages: the acute stage (phase I), subacute stage (stage II) and maintenance stage (phase III). Phase III CR is recognized as a community or home-based program committed to encourage exercise and a healthful lifestyle with the goal of minimizing the risk of recurring cardiac problems (secondary prevention). For the patients' benefit, phase III CR programs should be convenient, affordable, safe and enjoyable. The European Society of Cardiology also recommends that cardiac patients should be oriented to a long-term maintenance regimen with the use of support systems such as coronary clubs, gymnasiums or other facilities to promote long-term prevention strategies in the community.[3] In Germany, a close network of currently approximately 6600 heart groups has been established,[4] the concept of cardiac reconditioning centers for the prevention and rehabilitation of coronary patients has been tremendously successful.[5]

Japan Heart Club and the Certification Program for the Masters of CR

With support of the Japanese Association of Cardiac Rehabilitation (JACR), the Japan Heart Club (JHC), a non-profit organization, was established in 2004. The missions of JHC are to (1) organize scientific meetings and workshops for health promotion and prevention of cardiovascular diseases (CVD); (2) publish journals and learning materials for health promotion and prevention of CVD, (3) conduct research for health promotion and prevention of CVD; (4) organize facilities and develop programs for primary and secondary CVD prevention; (5) offer education programs and certification for the Master of Cardiac Rehabilitation (MCR), and other health-related professionals; (6) collaborate with national and international research institutes.

Certification program for MCR started in 2000. The objectives of the certification program are to improve quality of cardiac rehabilitation services and to educate the professionals playing a pivotal role in a primary CVD prevention programs in Japan. The JACR certifies those who understand the purpose of CR and have knowledge, skills and abilities for providing comprehensive CR program through a comprehensive team approach. Referring to American College of Sports Medicine certification objectives,[6] the MCR certification examination is based upon the knowledge, skills and abilities (KSA's) in each of the 11 categories below:

1. Anatomy and Biomechanics (4 KSAs)
2. Exercise Physiology (8 KSAs)
3. Electrocardiology (7 KSAs)
4. Human behavior and psychology (6 KSAs)
5. Pathophysiology (13 KSAs)
6. Clinical diagnosis and treatment (7 KSAs)
7. Health appraisal and fitness testing (10 KSAs)
8. Cardiac rehabilitation (3 KSAs)
9. Secondary prevention and patient education for CAD (11 KSAs)
10. Exercise programing (14 KSAs)
11. Safety, injury prevention and emergency care (3 KSAs)

Minimum requirements for candidates are as follows:

- Candidates must possess any of the following certifications or degrees: physician, registered nurse, physical therapist, occupational therapist, clinical laboratory technician, medical engineer, clinical psychologist, and/or exercise trainer.
- Have been a member of the JACR for more than 2 years.
- Have a minimum of 1 year of experience in a CR program or equivalent, and submit 10 case reports about the diagnosis, tests, treatment, and rehabilitation for patients with CVD.

The number of certified MCR has increased to 1835 by 2008 (Figure 1). As shown in Figure 2, the MCR attracts health-related professionals with various backgrounds some of which include physical therapists (39%), physicians (24%), nurses (18%), and clinical labolatory technicians (13%).

Community-based Phase III CR and Primary Prevention Programs in Japan

One of the missions for JHC is providing opportunities to participate in a CR program in the community. MedEX Club, a multidisciplinary facility provides MCR-supervised exercise sessions, education for patients, and training classes for citizens and health professionals. There are seven MedEx Club branches and 11 classes are being offered nationwide (Figure 3). The purpose of the MedEx club is to promote regular physical activity in CR patients and prevent cardiac disease and the recurrence of coronary events. Exercise training classes are held in various settings, some of which include hospitals, community centers, fitness facilities, and schools. The classes are typically held once or twice a week under the supervision of the MCRs. In the MedEx Club branch in Sendai, each session lasts 70 minutes and has a capacity of 12 people (Table 1).

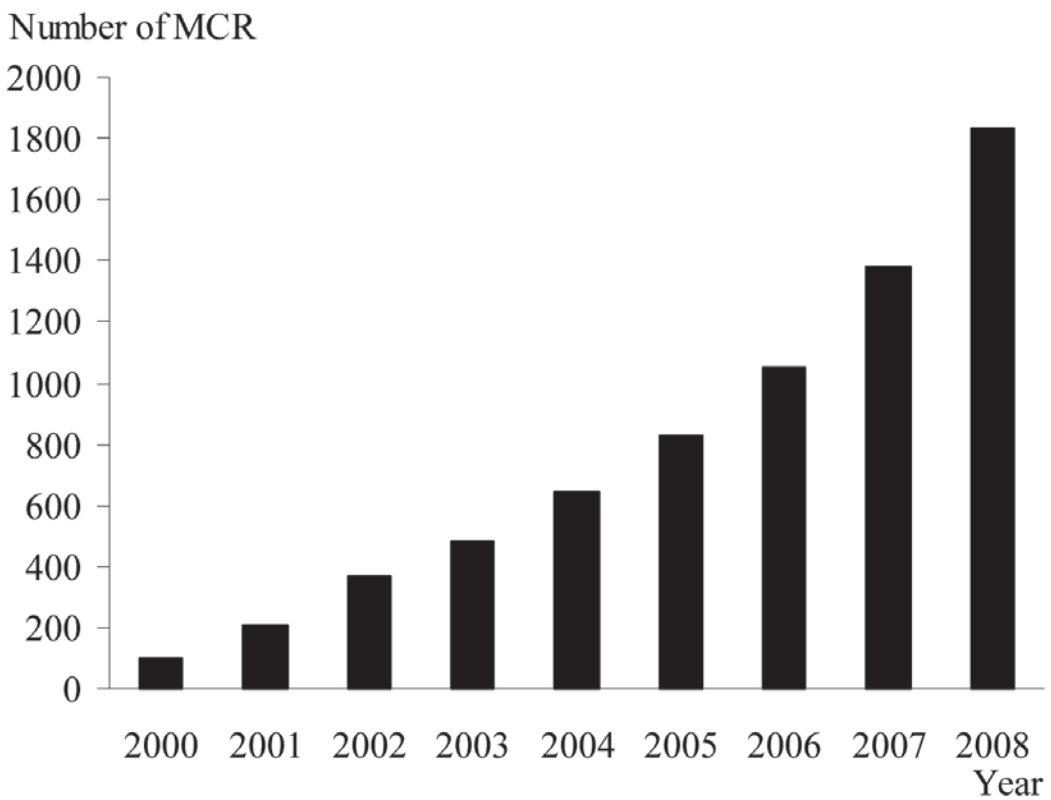

Figure 1. *The number of certified MCR from 2000-2008 (data from reference 7).*

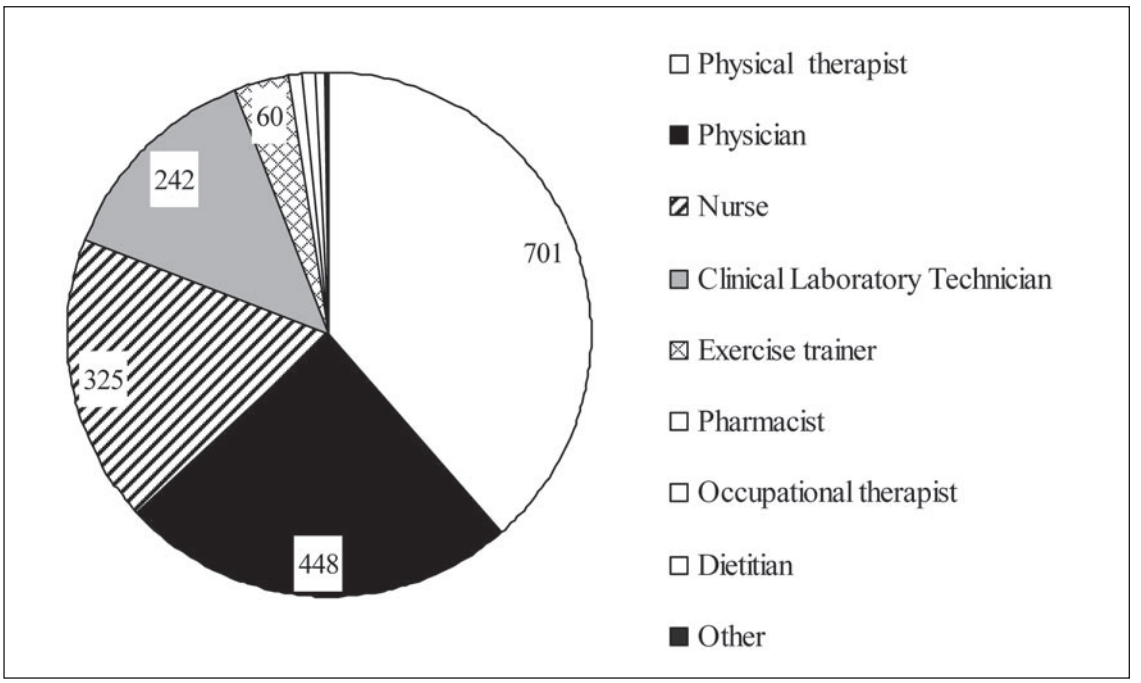

Figure 2. *The professional backgrounds of MCR (data from reference 7).*

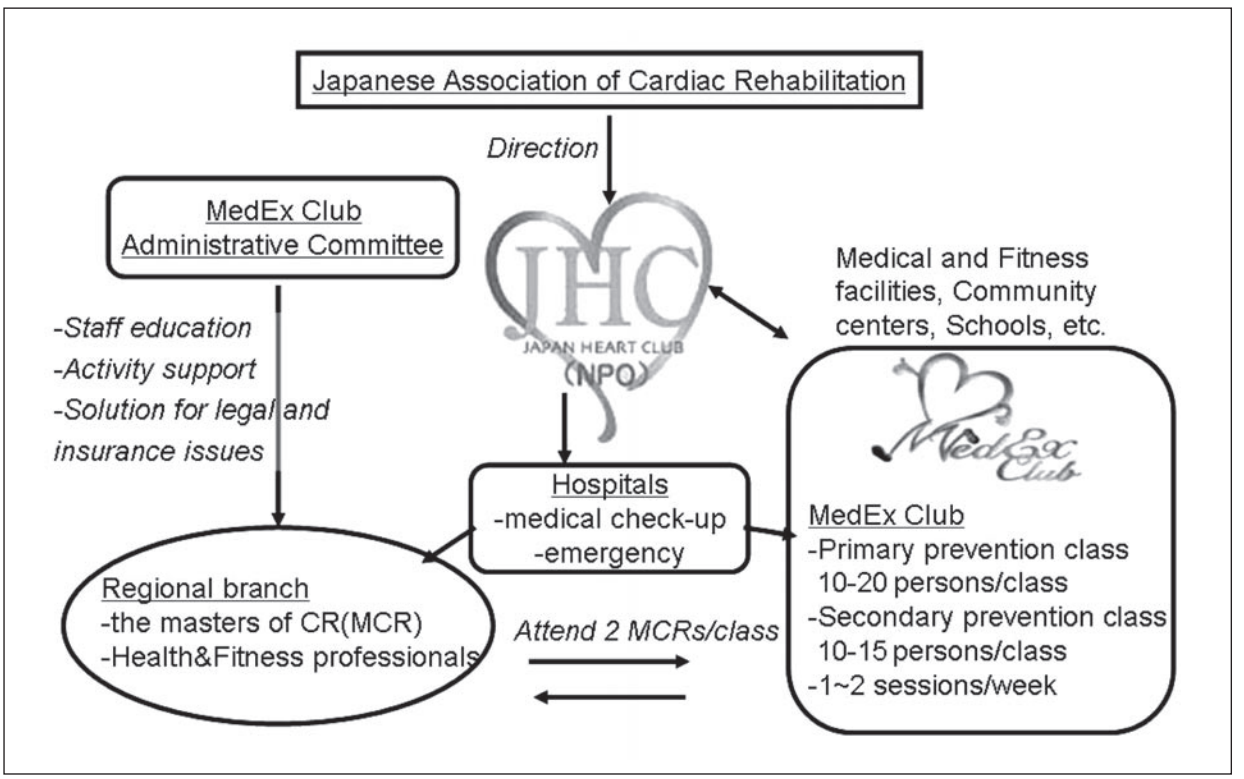

Figure 3. *MedEx Club, the community-based CR programs in Japan (data from references 8 and 9).*

Table 1. Current participants in MedEx Club at Sendai Branch

No	Age	Sex	CVD	Type of procedure	Coronary risk factors	Weight (kg)	BMI (kg/m^2)	VO_2@VT (ml/kg/min)	VO_2@Peak (ml/kg/min)
1	76	F	AP	stent	DL	54	23.1	12.1	16.0
2	74	M	MI	stent	HT	63.5	23.6	9.1	18.0
3	56	M	MI	CABG	DM, HT	67	23.2	15.6	23.3
4	70	M	MI	Stent	HT	56	19.2	7.0	19.3
5	66	M	MI	stent	HT, DL	62	23.3	18.8	28.2
6	61	M	MI	stent	HT	65	23.0	18.8	30.2
7	78	M	MI	stent	IGT	53	20.4	11.2	20.8
8	64	M	DCM	-	HT, DM	66	24.6	14.2	23.8
9	61	F	Paf	ablation	Ob	82	32.8	10.8	18.2
10	74	M	-	-	DM, HT, DL, Ob	87	33.2	7.9	16.4
11	60	F	MI	stent	HT, DL	53	22.6	15.6	19.6
12	66	F	MI	CABG	DM, HT, DL, Ob	69	30.3	9.7	18.1

Abbreviations: AP: angina pectoris, MI: myocardial infarction, DCM: dilated cardiomyopathy, Paf: paroxysmal atrial fibrillation, VT: ventilatory threshold, HT: hypertension, DL: dyslipidemia, DM: diabetes mellitus, IGT: impaired glucose tolerance, Ob: obesity.

Prior to and post-exercise session, participants measure their blood pressure and body weight and fill in the self-health check sheet. The exercise session starts with a 15 minute warm-up, either sitting or standing, followed by 15 minutes of aerobic exercise and 15 minutes of resistance training using elastic bands or their own body weight. The intensity of the aerobic exercise is determined by the cardiopulmonary exercise test measured upon entry to the club. Each session ends with cool down for 15 minutes which includes stretching of the major muscle groups. In addition to weekly exercise sessions, each patient keeps a log for blood pressure and body weight in the morning and night as well as step counts and exercise energy expenditure measured by an accelerometer. The log is submitted to the MCR program every 2 weeks. The MedEx club mainly offers exercise-based CR program, but patients also learn about physical activity, lifestyle modification, psychological management from the MCRs and other participants.

Cardiac rehabilitation is an integral component of the continuum of care for patients with CVD, the MedEx club can offer convenient, affordable, safe and enjoyable phase III programs and, in the near future, it may be recognized as a standard model of phase III CR service in Japan.

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