

## Background



### Cardiac rehabilitation and secondary prevention (CRSP):

- Has become a standard component of cardiovascular disease management.
- Currently includes exercise training, nutritional counseling, stress management, smoking cessation therapy and mental health counseling.
- Is not evaluated in a standardised way because of debate about the **evaluation constructs and measurement instruments** that should be used to assess effects of all treatment modalities.

## Purpose

To survey **evaluation constructs and measurement instruments** used to assess the effectiveness of comprehensive CRSP programs by reviewing the literature.

## Methods

- 1) PubMed search was performed on *cardiac rehabilitation AND quality assurance, quality indicator, process and outcome assessment* (MeSH or keywords in title or abstract).
- 2) Evaluation constructs and their measurement instruments were extracted by two reviewers.
- 3) Results were categorized according to different domains of CRSP (Table 1).

## Results

Domain	Studies (%)	
Evaluation construct <i>Measurement instrument</i>		
<b>Mortality and adverse events</b>	<b>26 (12.6)</b>	
<b>Physical functioning</b>	<b>106 (51.2)</b>	
Exercise capacity		79 (38.2)
<i>Maximal exercise test with gas analysis</i>		35 (16.9)
<i>Maximal exercise test without gas analysis</i>		44 (21.3)
<b>Psychosocial functioning</b>	<b>97 (46.9)</b>	
Quality of life		66 (31.9)
<i>Medical Outcomes Survey 36-Item Short Form (SF-36)</i>		45 (21.7)
<i>MacNew Quality of Live Questionnaire</i>		10 (4.8)
Anxiety and depression		57 (27.5)
<i>Hospital Anxiety and Depression Scale (HADS)</i>		17 (8.2)
<i>State Trait Anxiety Inventory (STAI) (anxiety only)</i>		10 (4.8)
<i>Beck Depression Inventory (BDI) (depression only)</i>		10 (4.8)
<b>Cardiovascular risk profile</b>	<b>80 (38.6)</b>	
Blood pressure level		58 (28.0)
Cholesterol level		49 (23.7)
Body Mass Index (BMI)		46 (22.2)
<b>Lifestyle parameters</b>	<b>54 (26.1)</b>	
Physical activity		35 (16.9)
Smoking		29 (14.0)
Dietary habits		16 (7.7)
<b>Therapy adherence</b>	<b>21 (10.1)</b>	
<b>Patient satisfaction</b>	<b>6 (2.9)</b>	

- Our search resulted in 1022 abstracts, after assessment for eligibility 207 studies were included.
- **Most studies included patients after an acute coronary syndrome (ACS) (79.2%), coronary artery bypass grafting (CABG) (57.7%) or percutaneous coronary intervention (PCI) (49.5%).**
- Mean age of the included patients was 63.0 year (n=79,845; 168 studies) and 74.4% was male (n= 86,300;176 studies).
- Studies originated from the United States and Canada (43.0%), Europe (42.0%), Asia (7.7%), Australia (4.8%), or elsewhere (2.5%).
- Many studies assessed multiple evaluation constructs and used several measurement instruments.
- **The table gives an overview of the extracted evaluation constructs and measurement instruments used to assess effects of CRSP programs.**

## Conclusion

- There is no uniformity in evaluation constructs and measurement instruments used to assess the effectiveness of comprehensive CRSP programs.
- The most frequently used evaluation constructs are exercise capacity, quality of life, anxiety and depression, and constructs related to the cardiovascular risk profile.
- Aspects of CRSP related to therapy adherence and patient satisfaction were rarely assessed.
- **These findings underline the need for more detailed recommendations for the use of evaluation constructs and measurement instrument to evaluate the effects of CRSP programs.**