Electrocardiographic Score to Evaluate Myocardial Ischemia through Exercise Test

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Exercise Testing Score for Myocardial Ischemia Gradation. Indian Pacing Electrophysiol J. 2007 Jan–Mar; 7(1): 61–72.

Introduction – Overview

- There are several scores addressed to contribute to the interpretation of cardiological tests
- Great experience gathered in literature with the application in CAD patients.
- Complex nature of equations and lack of information in physicians constitute an obstacle for its use in clinical practice.

Introduction – General aspects

- Several mathematical rates and scores include clinical and test variables

- The goal is optimizing the diagnostic and prognostic power of exercise test.

- Many scores consider the aspects of the electrocardiographic response in its composition.

Introduction - Considerations

- Many assess a constellation of parameters, while others perform a classification based only on one aspect.

- Most divide the wide spectrum of electrocardiographic alterations in only two categories.

Introduction – Current Limitations

- No research line turned toward the evaluation beyond the simple dichotomy

- No score provides objective information on the degree of myocardial ischemia.

- The lack of an appropriate encoding for ischemic response determines an inappropriate comparison of results by the great studies.

Objective

- To structure and validate an electrocardiographic score
- Clearly defined variables and graduated according to a value scale
- The points represent a ranking of ischemia that is documented in the test.

Applicability

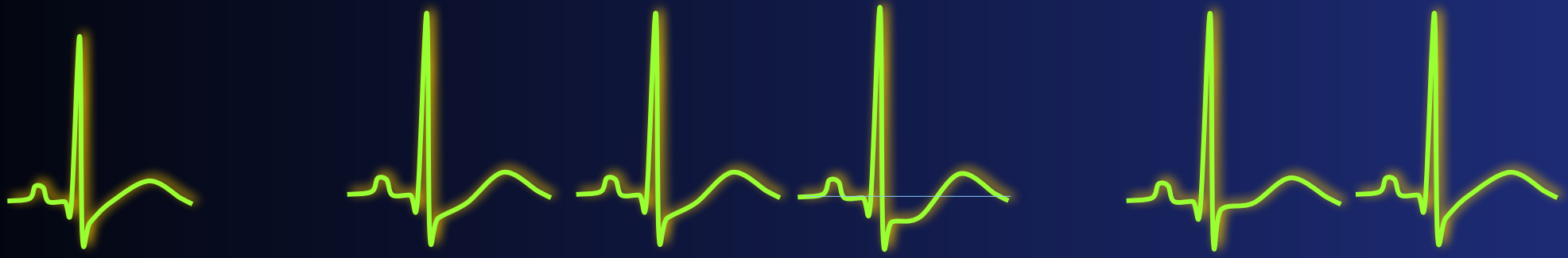
Classification of myocardial ischemia

- Diagnostic approach
- Therapeutic planning
- Evaluation of management
- Risk stratification
- Research – data homogenization
- Serial analysis (comparative)
- Ischemic pre-conditioning

Rationale – Scale of Ischemia

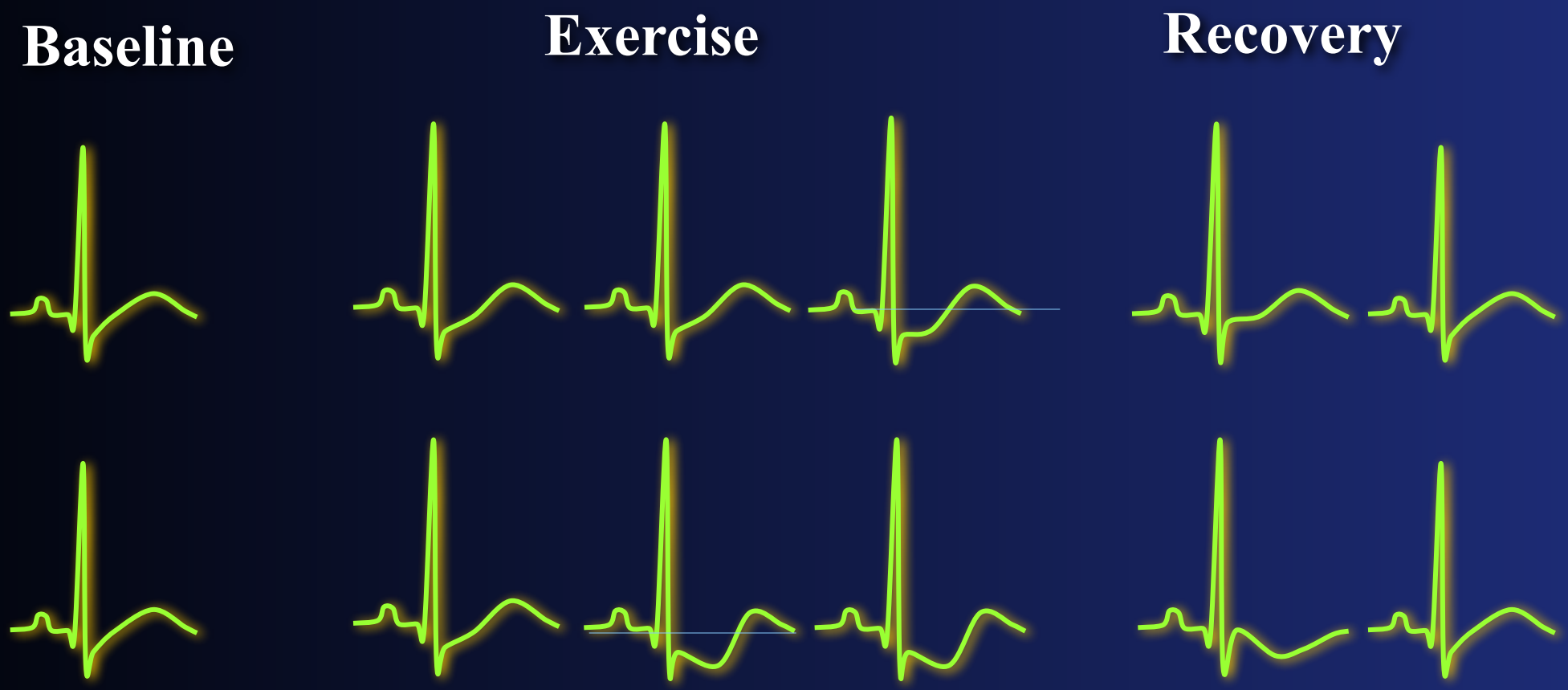
Baseline Exercise Recovery

1



2

Rationale – Scale of Ischemia



SCALE

Graduation system that stratifies the response in patterns that, when added, result in a scale or score.

Scale of Ischemia – Focus on ST Segment

M
Magnitude

1. Nothing
2. Small magnitude
3. Intermediary
4. Large
5. Very large

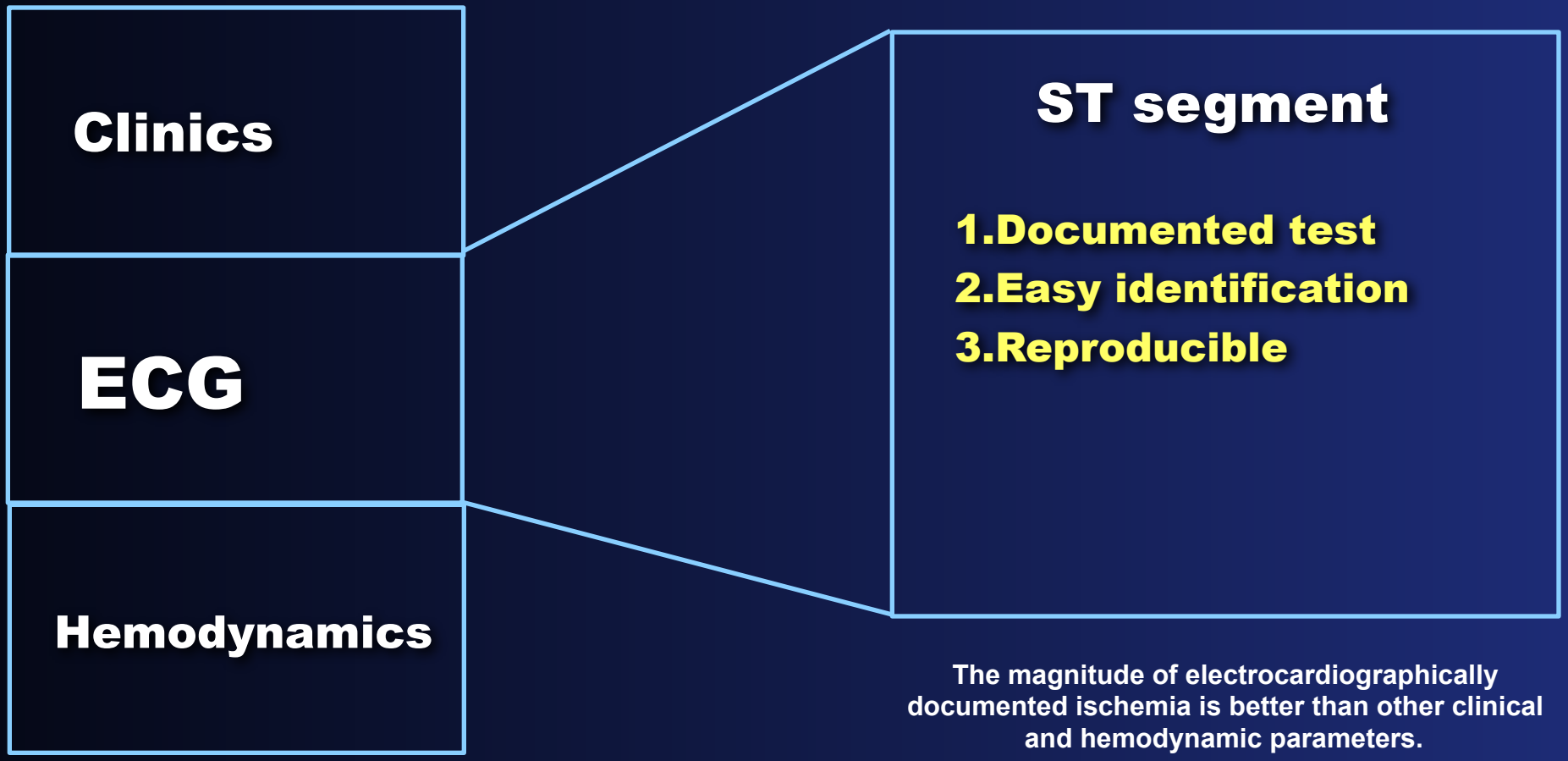
M
Morphology

1. Upsloping
2. Convex
3. Horizontal
4. Downsloping
5. Elevation

M
Moment

1. Transitory peak
2. Late peak
3. Early rapid
4. Early slow
5. Very early

Electrocardiographic Scale of Ischemia



The magnitude of electrocardiographically documented ischemia is better than other clinical and hemodynamic parameters.

SCALE - Magnitude

ZERO	0
SMALL MAGNITUDE	1
1 to 1.5 mm	2
1.6 to 2 mm	3
> 2 mm	4

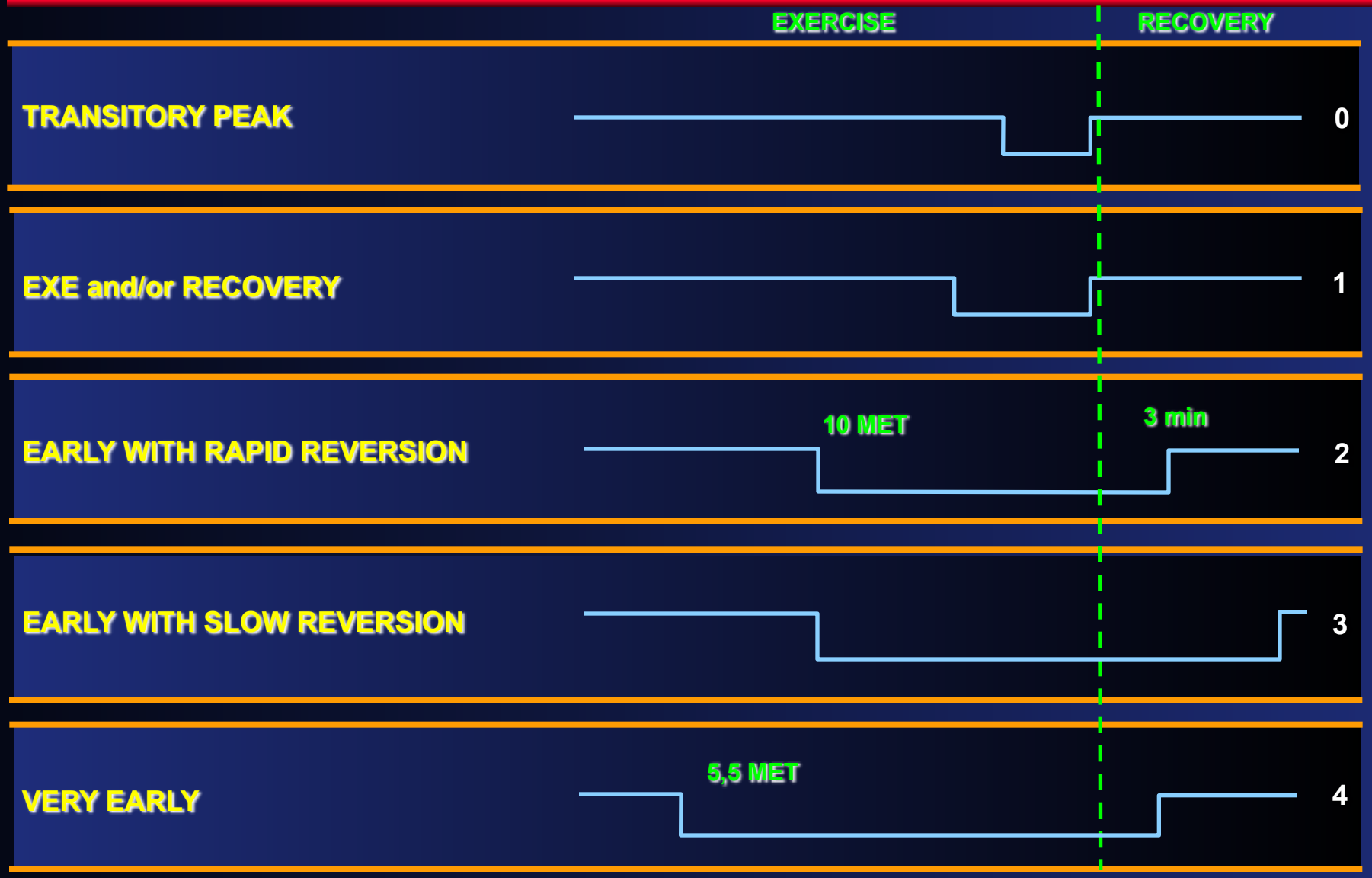
SCALE - Morphology

UPSLOPING ST DEPRESSION	0
CONVEX ST DEPRESSION	1
HORIZONTAL ST DEPRESSION	2
DOWNSLOPING ST DEPRESSION	3
ST ELEVATION	4

SCALE - Moment

TRANSITORY PEAK	0
PEAK and/or RECOVERY	1
EARLY WITH RAPID REVERSION	2
EARLY WITH SLOW REVERSION	3
VERY EARLY	4

SCALE - Moment



Bruce Protocol

	Velocity (mph)	Trend (%)	MET	
1	1.7	10	5.5	Very early
2	2.5	12	7	
3	3.4	14	10	Early
4	4.2	16	13	
5	5.0	18	16	
6	5.5	20	19	
7	6.0	22	22	