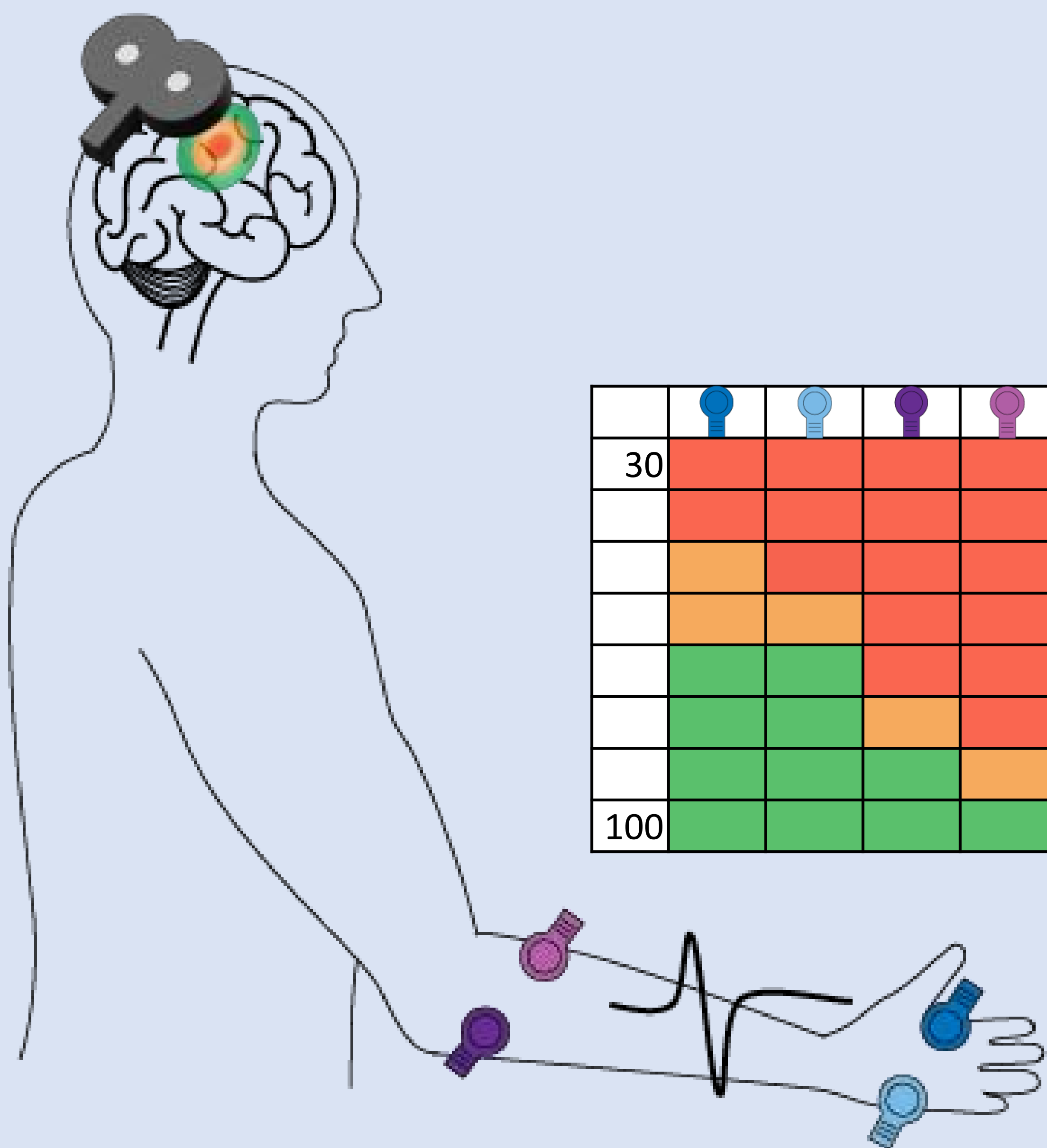


A novel composite neurophysiological assay of upper limb motor recovery after stroke

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1 month

	FDI	ADM	ECR	FCR
30	0	0	0	0
40	0	0	0	20
50	0	0	30	50
60	0	20	40	80
70	30	80	70	100
80	30	100	90	90
90	60	90	100	100
100	40	100	100	100

3 months

	FDI	ADM	ECR	FCR
30	0	0	0	0
40	0	30	10	60
50	0	70	30	100
60	10	100	100	100
70	30	100	100	100
80	40	100	100	100
90	70	100	100	100
100	70	100	100	100

6 months

	FDI	ADM	ECR	FCR
30	0	0	0	0
40	0	0	0	0
50	0	30	20	60
60	40	50	40	70
70	70	100	100	80
80	100	100	100	100
90	100	100	100	100
100	100	100	100	100

Upper Limb Clinical Assessment Scores

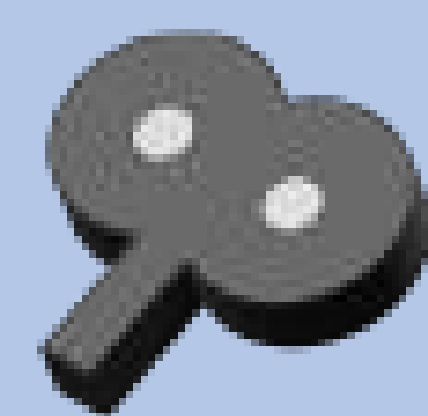
Impairment:	41/66	53/66	39/66
Activity:	6/57	39/57	30/57

Rationale:

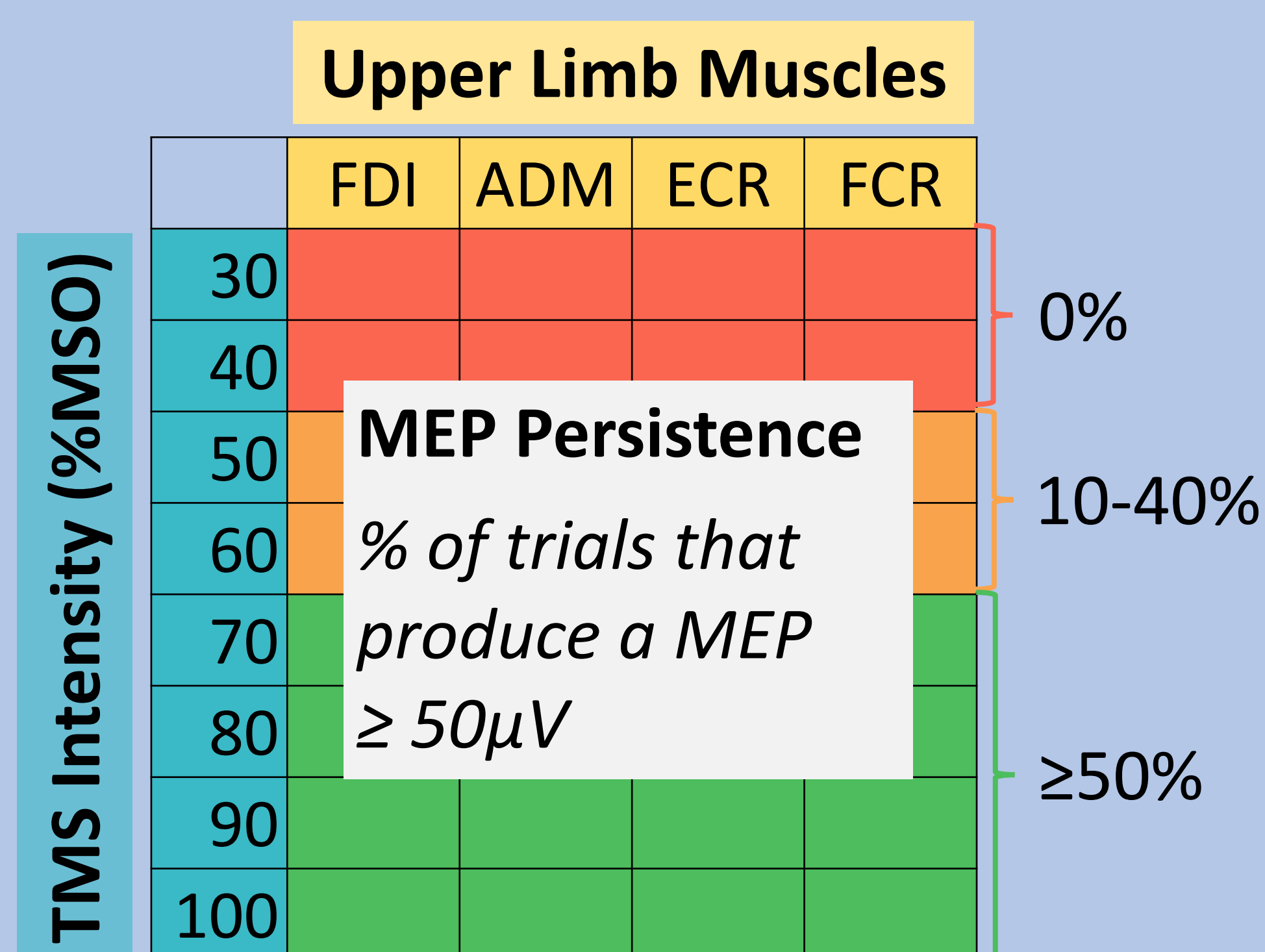
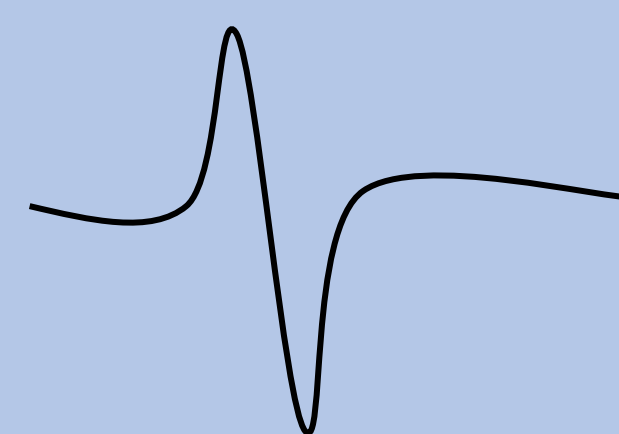
- PREP2 is an upper limb outcome prediction tool used with stroke patients
- Accurate for 75% of patients
- Uses the neurophysiological biomarker MEP status + clinical assessment scores
- A compositional neurophysiological approach may be a more salient biomarker

Constructing a Threshold Matrix

Transcranial Magnetic Stimulation (TMS) = non-invasive, painless method of activating motor pathways



Motor Evoked Potential (MEP) = electrical recording of a muscle in response to TMS

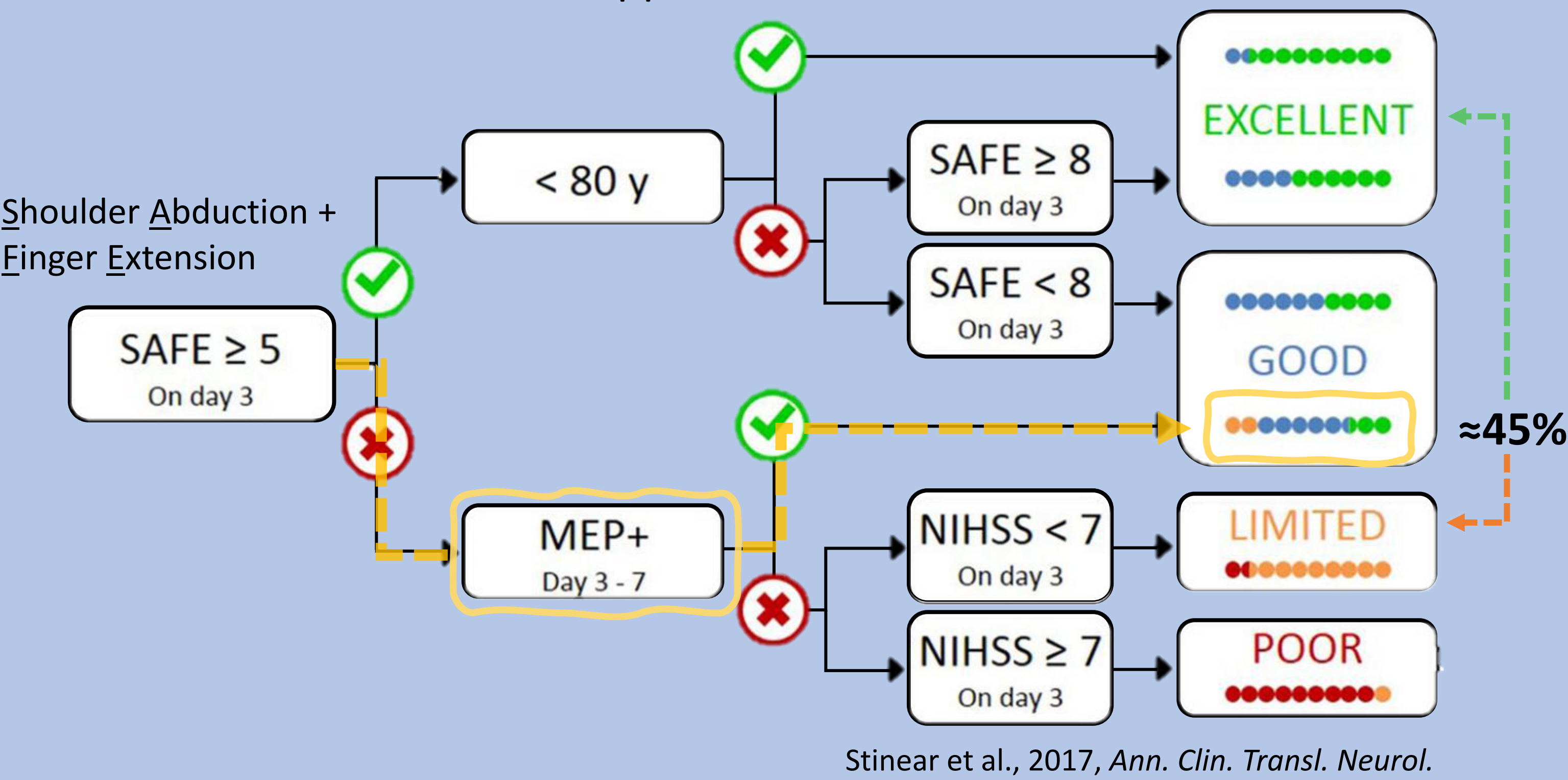


Healthy Older Adult

	FDI	ADM	ECR	FCR
30	0	0	0	0
40	80	10	0	10
50	100	100	100	90
60	100	100	100	100
70	100	100	100	100
80	100	100	100	100
90	100	100	100	100
100	100	100	100	100

Clinical Application

PREP2 Upper Limb Prediction Tool



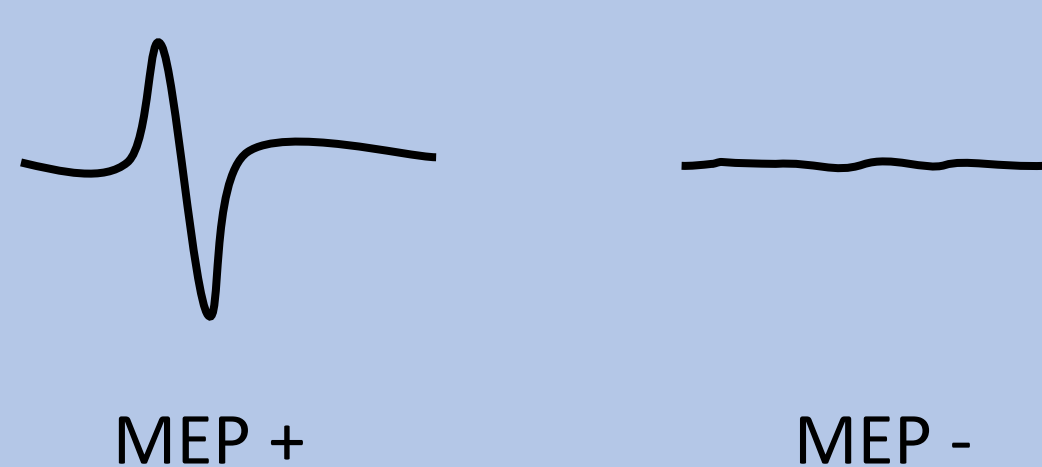
Stinear et al., 2017, Ann. Clin. Transl. Neurol.

Compositional neurophysiological analysis may provide novel and valuable information about the integrity of the corticomotor system after stroke

Incorporating the threshold matrix in prediction tools may improve the accuracy of predictions for upper limb outcome

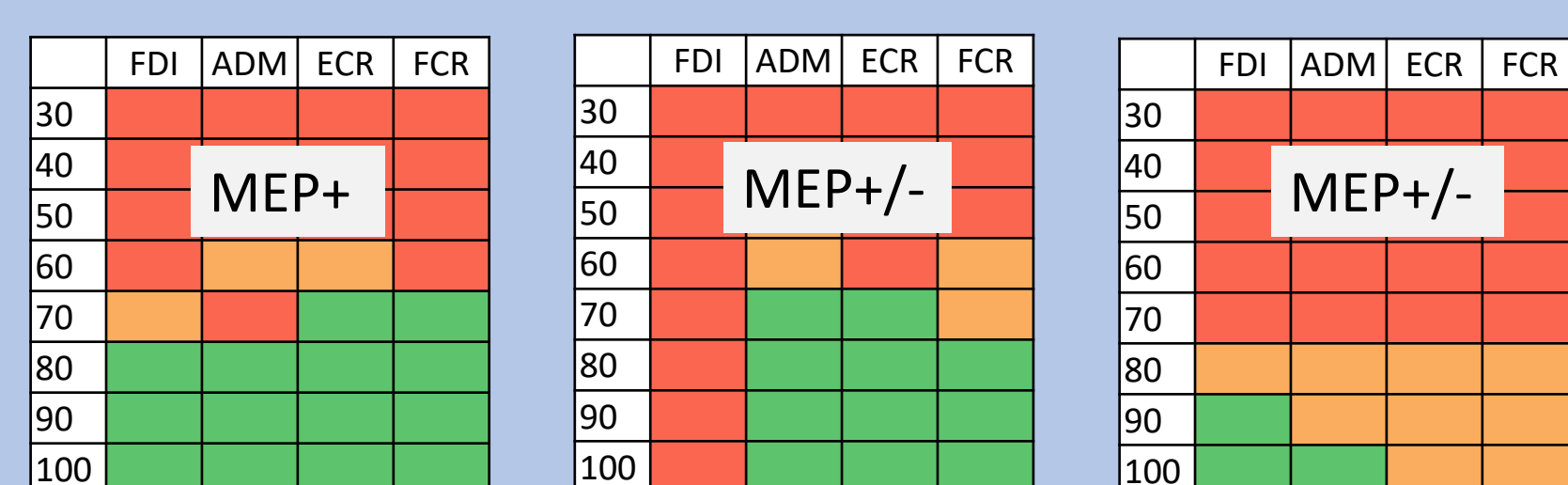
PREP2 uses MEP status

- 2 distal muscles
- Binarized MEP status



PREP3?

- 4 distal muscles
- MEP compositional measure



- ✓ Sufficient Green 4 muscles
- ✓ Sufficient Green 4 muscles
- ✗ Sufficient Green 4 muscles
- ✗ Sufficient Green 4 muscles

Abbreviations
NIHSS = National Institute of Health Stroke Score
PREP = Predicting Recovery Potential



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