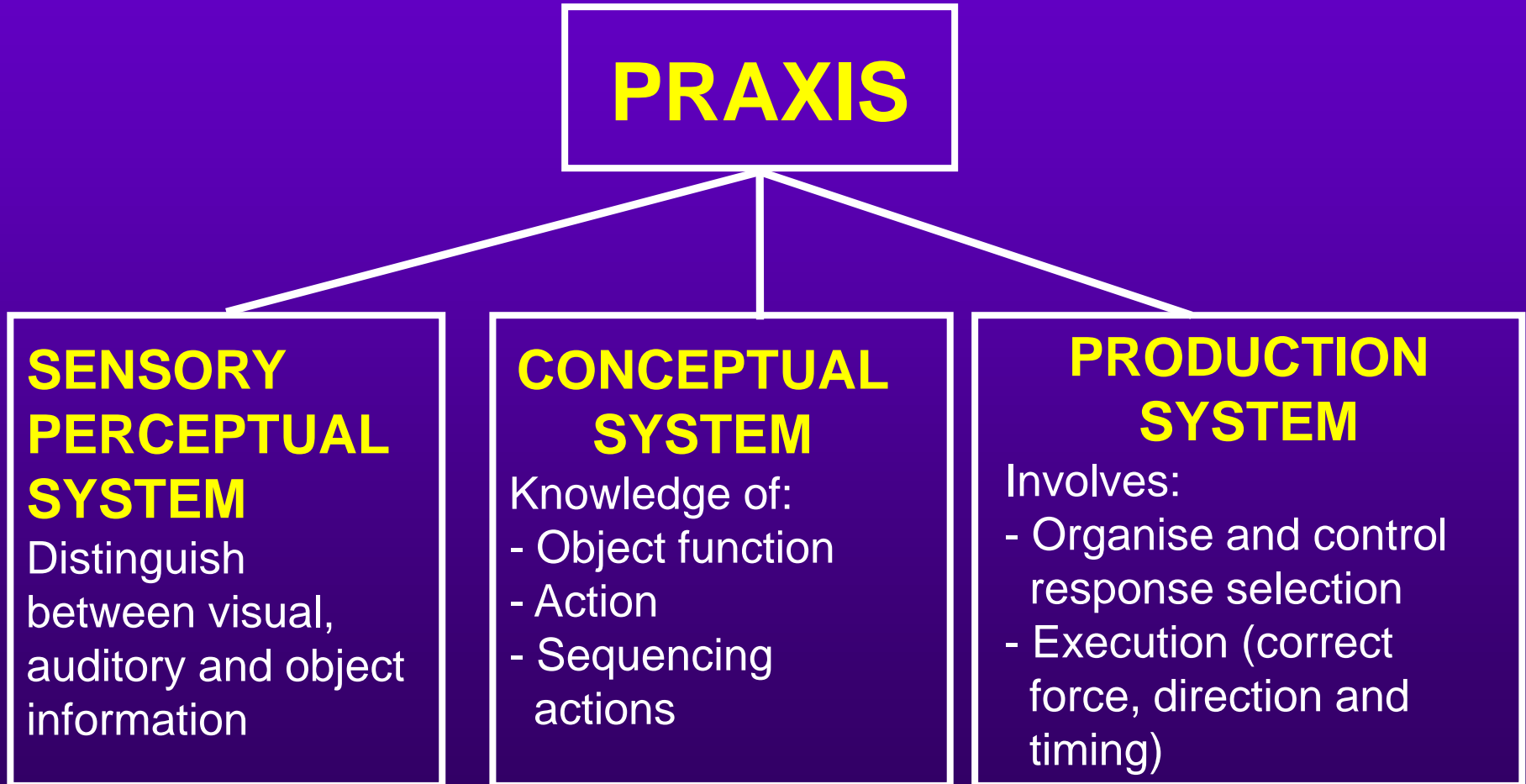


# Apraxia following stroke: Identification and interventions

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# ROY AND SQUARE PROCESSING MODEL (1996)



# APRAXIA

- `A cognitive motor planning disorder leading to an inability to perform actions in the absence of weakness or sensory loss`
- Prevalence – 1/3 of those in rehabilitation centres and nursing homes following left hemisphere stroke

Donkervoort 2000

# APRAXIA

- A disorder of learned, voluntary actions resulting from neurological impairment

Rothi LJG and Heilman KM (1997)

- Ideomotor Apraxia
- Ideational Apraxia

# Ideomotor Apraxia

- A disorder in the initiation and execution of planned sequences of movement. The concept of the task is understood but the movements lack the correct force, direction and timing in order to achieve a motor goal.

# Ideational Apraxia

- A disorder in the performance of skilled activity because the concept of the action related to the object is impaired.
- A disturbance in the conceptual organisation of actions

# Butler J. How comparable are tests of apraxia?

Clinical Rehabilitation 2002; 16: 389-398 (2002)

- “until a `gold standard` test of apraxia is found, that we don't rely on, just one test of apraxia for diagnosis and that we consider the functional and behavioural indices in ADL tasks as more clinically relevant than pure test scores”
- “the need for `expert judgement` to interpret errors remains apparent”

# Behavioural observations

- Tasks which can be used in a functional setting e.g.
  - Making a cold drink
  - Putting paper in an envelope
  - Hole punching paper and putting it in an A4 file.
    - Zwinkels et al (2004)



# Dovern J. 'Diagnosis and treatment of upper limb apraxia' Neurol (2012) 259 1269-1283

- Screening tool
  - AST – Apraxia Screen of TULIA (Vanbellingen et al)
  - CAS – Cologne Apraxia Screen (Weiss et al)
- Clinical diagnosis
  - Apraxia test by De Renzi et al
  - Test of Upper Limb Apraxia (TULIA)
- Research/scientific purposes
  - Apraxia test by Alexander et al
  - Test Battery by Bartolo et al
  - The Florida Apraxia Battery & Revised Sydney (FABERS)

# Measurement of disability in people with apraxia

- Observational method of assessment using four activities of daily living
- Activity performance is scored on a four point rating scale
- These descriptors assess the disability caused by apraxia as they focus on the stage at which the performance of the activity breaks down, rather than the cause.

van Heugten et al (2000)

# Ideomotor Apraxia

## Performance errors

- Spatial orientation errors
- Temporal imprecision errors (timing errors)
- Errors of the force of movement
- Poor distal differentiation
- Body part as object
- Gestural enhancement
- Vocalisation

# Ideational Apraxia

## Performance errors

- Inappropriate object use
- Sequencing errors - omission / incomplete
- Blending sequences together
- Action overshoots what's required
- Action remains incomplete
- Perseveration

# Cognitive Rehabilitation Approaches

Restitution – aimed at reducing specific cognitive deficits

Specific skills training – aimed at improving functional task ability

\*Substitution or cognitive strategy training – teach people new ways to deal with daily life problems

- **Activities in context**
  - Clark et al 1994
- **Appropriate environment**
  - Park S et al 1994
- **Errorless learning**
  - Goldenberg and Hagman 1998
- **Task specific training**
  - Goldenberg & Hagmaan 1998; Wilson 1998
- **Goal directed activity**
  - Goldenberg & Hagmaan 1998
- **Structured tasks**
  - Wilson 1998
- **Practice and repetition of meaningful tasks**
  - Goldenberg & Hagmaan 1998; Wilson 1998

# West C et al. ` Interventions for motor apraxia following stroke (review) The Cochrane Collaboration 2008, Issue 1

- Objective of review – to determine which interventions targeted at motor apraxia reduce disability
- Included RCTs of therapeutic intervention for motor apraxia in stroke – 3 trials, 132 patients
- Results – evidence of a small but short lived therapeutic effect in the two studies that reported change in ADLs – effect did not persist in the longer term
- Conclusion – insufficient evidence to support or refute the effectiveness of specific therapeutic interventions for motor apraxia after stroke.

# Strategy training - Apraxia

Stage of activity		Intervention
■ Initiation	→	■ Instruction
■ Execution	→	■ Assistance
■ Control	→	■ Feedback

Donkervoort M et al. (2001) Efficacy of strategy training in left hemisphere stroke patients with apraxia: a randomised clinical trial.

Neuropsychological Rehabilitation, 11, 549-566



# Transfer effects

For patients to function as independently as possible at home and in society, two types of transfer of treatment effects are needed

- Tasks taught in the rehab setting should be transferred to the home setting
- Transfer of intervention effects from trained to non trained (related) tasks is important in terms of the clinical success of a therapy programme as not all difficulties can be dealt with in therapy programmes

- Geusgens C et al 2006 & 2007

**THANK YOU**

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