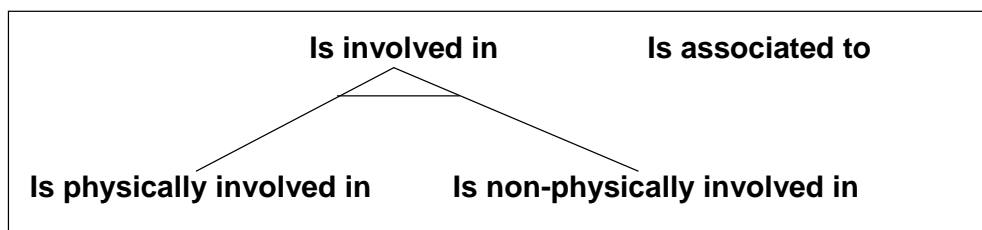


Examination & Subject-OS

// Metadata

Name	Examination & Subject-OS
Keywords	Laboratory examination, Psychological examination, MR examination, Evaluation examination, Healthy volunteer, Patient, Subject common identifier, Experimental group of subjects, MR examination protocol
Creation date	September 5 th , 2008
Last modification date	May 29 th , 2009
Has contributor	Bénédicte Batrancourt (v1.1), Michel Dojat (v1.0 + v1.1), Adrien Fanet (v1.1), Bernard Gibaud (v1.0 + v1.1), Pascal Girard (v1.0), Gilles Kassel (v1.0 + v1.1), Lynda Temal (v1.0)
Revisions made in v1.1	<ul style="list-style-type: none">- Concepts representing different kinds of examination have been added: 'Psychological examination', 'Experimental psychology examination', 'Psychophysical examination', 'Behavioural examination', 'Evaluation examination', 'Diagnosis examination', 'Follow-up examination'.- The concept 'Human subject' has been added.
Used ontology engineering methodology	OntoSpec
Is of type	Domain ontology
Natural language	English
Has ontology language	OntoSpec
Has formality level	Semi-informal
Ressource locator	http://www.laria.u-picardie.fr/IC/site/IMG/pdf/Examination_Subject-OS.pdf
Version	1.1
Number of concepts (classes)	26
Number of relations (properties)	7

// Relations



Is associated to

Properties

[EP/DR & RR] An EXPERIMENTAL GROUP OF SUBJECTS is associated to a STUDY.

Is involved in

Properties

[EP/DR & RR] A SUBJECT *is involved in* a STUDY. [EP/NSMC] *x is involved in y* iff there exist a CONCEPTUALIZATION *c* and TIME INTERVALS *t* and *t'* such that *x is referred to by c at t* and *c is data of y at t'*. [EP/IVL] *Is involved in* mutually implies *involves*.

Comment

[DEF] A SUBJECT *is involved in* a STUDY whenever knowledge about the SUBJECT is used for the STUDY.

Is physically involved in

Properties

[EP/DR & RR] A SUBJECT *is physically involved in* a STUDY WITH EXAMINATION. [EP/NSMC] *x is physically involved in y* iff there exist an EXAMINATION *e* and a TIME INTERVAL *t* such that *x is affected by e at t* and *e is a proper part of y*. [EP/ICL] *Is physically involved in* is incompatible with *is non-physically involved in*. [EP/IVL] *Is physically involved in* mutually implies *physically involves*.

Comment

[DEF] A SUBJECT *is physically involved in* a STUDY whenever he/she undergoes an EXAMINATION which is a part of the STUDY and the resulting knowledge is used for the STUDY.

Is non-physically involved in

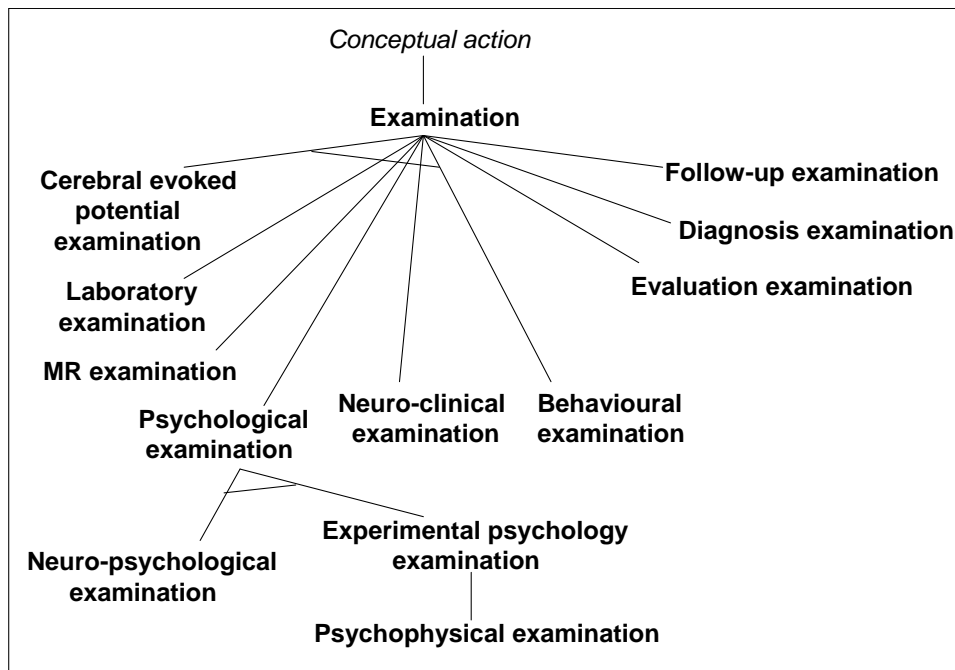
Properties

[EP/DR & RR] A SUBJECT *is non-physically involved in* a STUDY. [EP/NSMC] *x is non-physically involved in y* iff there exist no EXAMINATION *e* and no TIME INTERVAL *t* such that *x is affected by e at t* and *e is a proper part of y*. [EP/ICL] *Is non-physically involved in* is incompatible with *is physically involved in*. [EP/IVL] *Is non-physically involved in* mutually implies *non-physically involves*.

Comment

[DEF] A SUBJECT *is non-physically involved in* a STUDY if all the knowledge concerning this SUBJECT and used for the present STUDY was obtained from EXMINATIONS that were not a proper part of this STUDY.

// Concepts



Examination, Medical test

Meta-properties

EXAMINATION is RIGID (+**R**). EXAMINATION is EXTERNALLY-DEPENDENT (+**D**). CEREBRAL EVOKED POTENTIAL EXAMINATION, LABORATORY EXAMINATION, MR EXAMINATION, PSYCHOLOGICAL EXAMINATION, NEURO-CLINICAL EXAMINATION, and BEHAVIOURAL EXAMINATION is a *disjunctive sub-division* of EXAMINATION.

Properties

[EP/SL] An EXAMINATION, or MEDICAL TEST, is a CONCEPTUAL ACTION.
 [EP/ER] Every EXAMINATION *affects* exactly one SUBJECT *at* a TIME INTERVAL.
 [EP/ER] Every EXAMINATION *is supervised by* an EXAMINATION EXECUTIVE *at* a TIME INTERVAL. [EP/ER] Every EXAMINATION *has for agent* exactly one CENTRE *at* a TIME INTERVAL. [EP/ER] Every EXAMINATION *has for date* exactly one DATE.

Comment

[DEF] The common definition for an EXAMINATION is: a kind of procedure performed to detect or diagnose a disease. We extend this definition to consider that an EXAMINATION can also be used to evaluate healthy subject's conditions.

[SA] EXAMINATIONS are divided into CEREBRAL EVOKED POTENTIAL EXAMINATIONS, LABORATORY EXAMINATIONS, MR EXAMINATIONS, PSYCHOLOGICAL EXAMINATIONS, NEURO-CLINICAL EXAMINATIONS, and BEHAVIOURAL EXAMINATIONS according both to the kind of instruments which are used to acquire data about the SUBJECTS and to the category of actors which perform the EXAMINATIONS.

[SA] EVALUATION, DIAGNOSIS, and FOLLOW-UP EXAMINATIONS differentiate themselves according to the purpose of the EXAMINATION.

Cerebral evoked potential examination

Meta-properties

CEREBRAL EVOKED POTENTIAL EXAMINATION is RIGID (+**R**). CEREBRAL EVOKED POTENTIAL EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A CEREBRAL EVOKED POTENTIAL EXAMINATION is an EXAMINATION.

Comment

[DEF] A CEREBRAL EVOKED POTENTIAL EXAMINATION is an examination by which evoked potentials are recorded. In neurophysiology, an evoked potential (or "evoked response") is an electrical potential recorded from a human or animal following presentation of a stimulus, as distinct from spontaneous potentials as detected by electroencephalograms or electromyogram. There are three kinds of evoked potentials in widespread clinical use since the 1970s: auditory evoked potentials, usually recorded from the scalp but originating at brainstem level; visual evoked potentials, and somatosensory evoked potentials, which are elicited by electrical stimulation of peripheral nerve. (source: wikipedia).

Laboratory examination, Laboratory test

Meta-properties

LABORATORY EXAMINATION is RIGID (+**R**). LABORATORY EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A LABORATORY EXAMINATION, or LABORATORY TEST, is an EXAMINATION.

Comment

[DEF] A LABORATORY EXAMINATION (also called LABORATORY TEST) is a medical procedure that consists of performing tests in a laboratory on samples, such as blood, urine or other substance, obtained from a patient.

MR examination

Meta-properties

MR EXAMINATION is RIGID (+**R**). MR EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A MR EXAMINATION is an EXAMINATION. [EP/ER] Every MR EXAMINATION *has for proper part* at least one MR DATASET ACQUISITION. [EP/ER] Every MR EXAMINATION *complies with* exactly one MR EXAMINATION PROTOCOL.

Comment

[DEF] An MR EXAMINATION is an examination that uses the MR imaging technique. For nervous system investigation, MR examination mainly explores anatomical brain structures (based on structural MRI), cerebral activations (via functional MRI, cerebral physiology (via volume or cerebral flow measurements) or metabolism (via MR spectroscopy).

Psychological examination

Meta-properties

PSYCHOLOGICAL EXAMINATION is RIGID (+**R**). PSYCHOLOGICAL EXAMINATION is EXTERNALLY-DEPENDENT (+**D**). NEURO-PSYCHOLOGICAL EXAMINATION and EXPERIMENTAL PSYCHOLOGY EXAMINATION *is a disjunctive sub-division of* PSYCHOLOGICAL EXAMINATION.

Properties

[EP/SL] A PSYCHOLOGICAL EXAMINATION is an EXAMINATION.

Comment

[DEF] Based on various tests to measure abilities, as in intelligence, aptitude, and achievement tests, or to evaluate personality traits.

Neuro-psychological examination, Neuropsychological evaluation**Meta-properties**

NEURO-PSYCHOLOGICAL EXAMINATION is RIGID (+**R**). NEURO-PSYCHOLOGICAL EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A NEURO-PSYCHOLOGICAL EXAMINATION, or NEUROPSYCHOLOGICAL EVALUATION, is a PSYCHOLOGICAL EXAMINATION. [EP/ER] Every NEURO-PSYCHOLOGICAL EXAMINATION *has for part* at least one NEUROPSYCHOLOGICAL TEST. [EP/VR] Every NEURO-PSYCHOLOGICAL EXAMINATION *is supervised as examination executive by* only a NEUROLOGIST or a NEUROPSYCHOLOGIST or a SPEECH THERAPIST.

Comment

[DEF] A NEURO-PSYCHOLOGICAL EXAMINATION (or neuropsychological evaluation) is a comprehensive assessment of cognitive and behavioural functions using a set of standardized tests and procedures in a formal environment. Various mental functions are systematically tested, including: Intelligence, Problem solving and conceptualization, Planning and organization Attention, memory, and learning, Academic Skills, Perceptual and motor abilities, Emotions, behaviour, and personality (Source: Connecticut Neuropsychological Society). It is used in diagnosing, evaluation or following up brain dysfunction or damage and central nervous system disorders or injury. Most neuropsychological tests in current use are based on traditional psychometric theory. In this model, a person's raw score on a test is compared to a large general population normative sample, that should ideally be drawn from a comparable population to the person being examined. Normative studies frequently provide data stratified by age, level of education, and/or ethnicity, where such factors have been shown by research to affect performance on a particular test. This allows for a person's performance to be compared to a suitable control group, and thus provide a fair assessment of their current cognitive functioning.

Experimental psychology examination**Meta-properties**

EXPERIMENTAL PSYCHOLOGY EXAMINATION is RIGID (+**R**). EXPERIMENTAL PSYCHOLOGY EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] An EXPERIMENTAL PSYCHOLOGY EXAMINATION is a PSYCHOLOGICAL EXAMINATION.

Comment

[DEF] The branch of psychology which seeks to learn more about the fundamental causes of behaviour by studying various psychologic phenomena in controlled experimental situations (Source: MSH/MH). (Concept: [CUI C0033915] Psychology, Experimental, Semantic Type: Biomedical Occupation or Discipline).

Psychophysical examination**Meta-properties**

PSYCHOPHYSICAL EXAMINATION is RIGID (+**R**). PSYCHOPHYSICAL EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A PSYCHOPHYSICAL EXAMINATION is an EXPERIMENTAL PSYCHOLOGY EXAMINATION.

Comment

[DEF] Psychophysical examination investigates, in controlled experimental conditions, the relations between the physical characteristics of a stimulus, e.g., frequency or intensity, with the response to the stimulus, in order to assess the psychologic factors or the evoked perception involved in the relationship. (Source: MSH/MH). (Concept: [CUI C0033930] Psychophysics, Semantic Type: Biomedical Occupation or Discipline).

Neuro-clinical examination, Neurological examination

Meta-properties

NEURO-CLINICAL EXAMINATION is RIGID (+**R**). NEURO- CLINICAL EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A NEURO-CLINICAL EXAMINATION, or NEUROLOGICAL EXAMINATION, is an EXAMINATION. [EP/ER] Every NEURO-CLINICAL EXAMINATION *has for part* at least one NEUROCLINICAL INSTRUMENT-BASED ASSESSMENT. [EP/VR] Every NEURO-CLINICAL EXAMINATION *is supervised as examination executive by* only a NEUROLOGIST.

Comment

[DEF] A NEURO-CLINICAL EXAMINATION (or neurological examination) is the physical examination of the structures and functions of the nervous system. It attempts to identify or exclude signs of nervous system disease, and - if these signs are present - to produce a likely anatomical or physiological explanation that can be tested through medical imaging, neurophysiology, blood tests, lumbar puncture or a combination. The Neurological Examination is directed primarily towards the localization of lesions within the nervous system and is traditionally split into an examination of the cognitive state, cranial nerves, motor system, sensory system, cerebellar system, walking and gait and the extrapyramidal system. Identification of the pathology is the key process by which neurologists develop their differential diagnosis. Further tests may be needed to confirm a diagnosis, precise neural bases of the neurological pathology and ultimately guide therapy and appropriate management.

Behavioural examination

Meta-properties

BEHAVIOURAL EXAMINATION is RIGID (+**R**). BEHAVIOURAL EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A BEHAVIOURAL EXAMINATION is an EXAMINATION. [EP/ER] Every BEHAVIOURAL EXAMINATION *has for part* at least one BEHAVIOURAL INSTRUMENT-BASED ASSESSMENT. [EP/EVR] Every BEHAVIOURAL EXAMINATION *is supervised as examination executive by* only a NEUROLOGIST or a PSYCHIATRIST.

Comment

[DEF] A BEHAVIOURAL INSTRUMENT investigates, in psychopathology, the presence or absence of a particular skill, knowledge or behavior. It may be indicative of mental illness or psychological impairment, such as abnormal, maladaptive behaviour or mental activity.

Evaluation examination

Meta-properties

EVALUATION EXAMINATION is RIGID (+**R**). EVALUATION EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] An EVALUATION EXAMINATION is an EXAMINATION.

Comment

[DEF] An evaluation examination is an examination whose primary goal is to attest (from a legal or regulatory viewpoint) a particular state of the subject, e.g. healthy, or showing a certain degree of disability.

Diagnosis examination

Meta-properties

DIAGNOSIS EXAMINATION is RIGID (+**R**). DIAGNOSIS EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A DIAGNOSIS EXAMINATION is an EXAMINATION.

Comment

[DEF] A diagnosis examination is an examination primarily aimed at identifying or eliminating a specific medical condition or disease by its signs, symptoms, and from the results of various diagnostic procedures.

Follow-up examination

Meta-properties

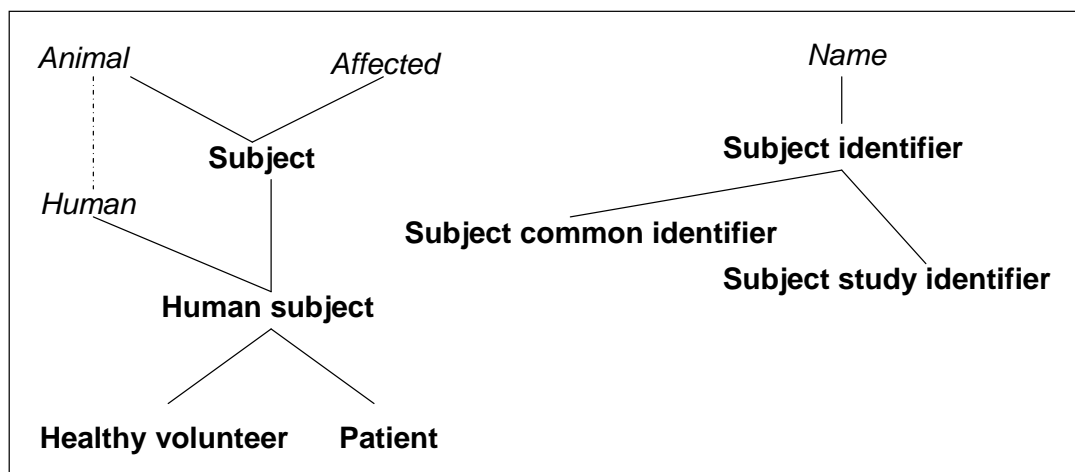
FOLLOW-UP EXAMINATION is RIGID (+**R**). FOLLOW-UP EXAMINATION is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A FOLLOW-UP EXAMINATION is an EXAMINATION.

Comment

[DEF] A follow-up examination is an examination primarily aimed at assessing the evolution of the subject's state, in comparison to a baseline state (e.g. last consultation, beginning of a treatment).



// Relations

Has for subject identifier

Properties

[EP/DR & RR] A SUBJECT *has for subject identifier* a SUBJECT IDENTIFIER. [EP/SL] x *has for subject identifier* y implies that x *has for name* y. [EP/IVL] *Has for subject identifier* of mutually implies *is the subject identifier of*.

Is the subject identifier of

Properties

[EP/DR & RR] A SUBJECT IDENTIFIER *is the subject identifier of* a SUBJECT. [EP/SL] x *is the subject identifier of* y implies that x *is the name of* y. [EP/IVL] *Is the subject identifier of* mutually implies *has for subject identifier*.

Is given for

Properties

[EP/DR & RR] A SUBJECT STUDY IDENTIFIER *is given for* a STUDY.

// Concepts

Subject

Meta-properties

SUBJECT is ANTI-RIGID (~**R**). SUBJECT is CARRYING AN IDENTITY CRITERION (+**I**). SUBJECT is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SLD] A SUBJECT is an ANIMAL which *is affected by* an EXAMINATION *at a* TIME INTERVAL (and therefore is an **AFFECTED**). [EP/ER] Every SUBJECT *has for subject identifier* exactly one SUBJECT COMMON IDENTIFIER.

Comment

[DEF] CDISC Clinical Research Glossary: a subject is an individual who participates in a clinical trial, either as recipient of the investigational product(s) or as a control. Note that our concept SUBJECT encompasses ANIMALS in general.

Human subject

Meta-properties

HUMAN SUBJECT is ANTI-RIGID (~**R**). HUMAN SUBJECT is CARRYING AN IDENTITY CRITERION (+**I**). HUMAN SUBJECT is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SLD] A HUMAN SUBJECT is a HUMAN which is a SUBJECT.

Healthy volunteer

Meta-properties

HEALTHY VOLUNTEER is ANTI-RIGID (~**R**). HEALTHY VOLUNTEER is CARRYING AN IDENTITY CRITERION (+**I**). HEALTHY VOLUNTEER is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A HEALTHY VOLUNTEER is a HUMAN SUBJECT.

Comment

[DEF] CDISC Clinical Research Glossary: Subject (not a patient) in a clinical trial. Note: Usually healthy volunteers serve as subjects in Phase 1 trials.

Patient**Meta-properties**

PATIENT is ANTI-RIGID (~**R**). PATIENT is CARRYING AN IDENTITY CRITERION (+**I**). PATIENT is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A PATIENT is a HUMAN SUBJECT.

Comment

[DEF] CDISC Clinical Research Glossary: a patient is a person under a physician's care for a particular disease or condition. NOTE: A subject in a clinical trial is not necessarily a patient, but a patient in a clinical trial is a subject.

Subject identifier**Meta-properties**

SUBJECT IDENTIFIER is RIGID (+**R**). SUBJECT IDENTIFIER is DEPENDENT (+**D**).

Properties

[EP/SLD] A SUBJECT IDENTIFIER is a NAME which *is the subject identifier of* a SUBJECT.

Subject common identifier**Meta-properties**

SUBJECT COMMON IDENTIFIER is RIGID (+**R**). SUBJECT COMMON IDENTIFIER is DEPENDENT (+**D**).

Properties

[EP/SL] A SUBJECT COMMON IDENTIFIER is a SUBJECT IDENTIFIER.

Comment

[DEF] This identifier represents the unique subject identifier without any reference to a specific study.

Subject study identifier**Meta-properties**

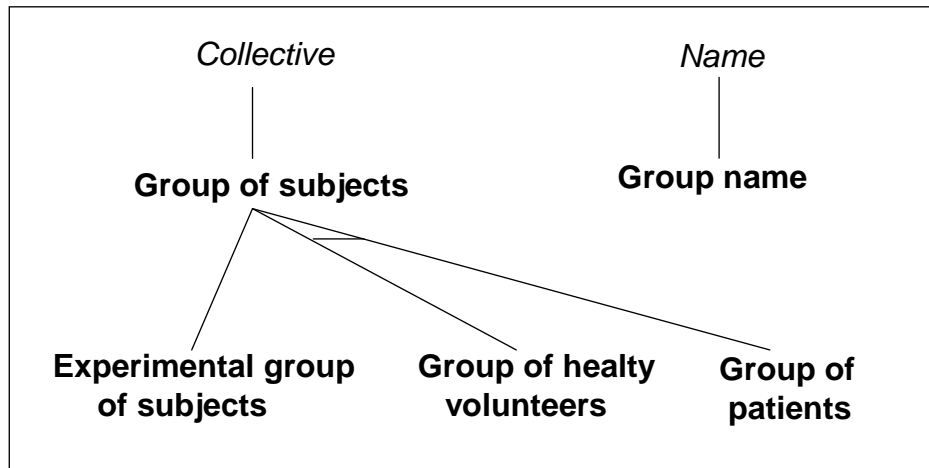
SUBJECT STUDY IDENTIFIER is RIGID (+**R**). SUBJECT STUDY IDENTIFIER is DEPENDENT (+**D**).

Properties

[EP/SLD] A SUBJECT STUDY IDENTIFIER is a SUBJECT IDENTIFIER which *is given for* a STUDY.

Comments

[DIV] A SUBJECT may have different SUBJECT STUDY IDENTIFIERS which are given for different STUDIES.



Group of subjects

Meta-properties

GROUP OF SUBJECTS is RIGID (+**R**). GROUP OF SUBJECTS is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SLD] A GROUP OF SUBJECTS is a COLLECTIVE whose *members* are all SUBJECTS. [EP/ER] Every GROUP OF SUBJECTS *has for name* a GROUP NAME.

Comment

[DIV] A GROUP OF SUBJECTS can have only one SUBJECT as *member*.

Experimental group of subjects

Meta-properties

EXPERIMENTAL GROUP OF SUBJECTS is RIGID (+**R**). EXPERIMENTAL GROUP OF SUBJECTS is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] An EXPERIMENTAL GROUP OF SUBJECTS is a GROUP OF SUBJECTS. [EP/ER] Every EXPERIMENTAL GROUP OF SUBJECTS *is associated to* exactly one STUDY.

Group of healthy volunteers

Meta-properties

GROUP OF HEALTHY VOLUNTEERS is RIGID (+**R**). GROUP OF HEALTHY VOLUNTEERS is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SLD] A GROUP OF HEALTHY VOLUNTEERS is a GROUP OF SUBJECTS whose *members* are all HEALTHY VOLUNTEERS. [EP/ICL] No GROUP OF HEALTHY VOLUNTEERS is a GROUP OF PATIENTS.

Comment

[DIV] The individuals gathered in such groups are not necessarily known. Only the group name, the number of subjects enrolled, and the mean age of the group are generally known.

Group of patients

Meta-properties

GROUP OF PATIENTS is RIGID (+**R**). GROUP OF PATIENTS is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SLD] A GROUP OF PATIENTS is a GROUP OF SUBJECTS whose *members* are all PATIENTS.

Comment

[DIV] The individuals gathered in such groups are not necessarily known. Only the group name, the number of subjects enrolled, the mean age of the group and, if any, the pathology are generally known.

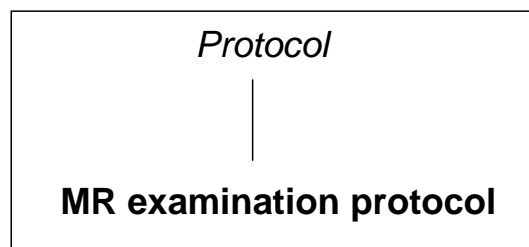
Group name

Meta-properties

GROUP NAME is RIGID (+**R**). GROUP NAME is DEPENDENT (+**D**).

Properties

[EP/SLD] A GROUP NAME is a NAME which *is the name of* a GROUP OF SUBJECTS.



MR examination protocol

Meta-properties

MR EXAMINATION PROTOCOL is RIGID (+**R**). MR EXAMINATION PROTOCOL is EXTERNALLY-DEPENDENT (+**D**).

Properties

[EP/SL] A MR EXAMINATION PROTOCOL is a PROTOCOL.