Data Codebook of movement measures across activities of daily living (Walking (level, up or downstairs), sitting, standing, laying)

Legacy definition of the variable or measure

More descriptive name of variable or measure   Description of the variable or measurement

		Measurement		Movement type		Data transformations	
original	modified	form of movement: [b]ody or [g]ravity	signal source: [g]yroscope or [a]accelerometer* *	directional: direction of movement (axis X, Y or Z)	omnidirectional: derived from linear acceleration & linear velocity [Jerk]	raw[t*] or [f***]ourier transformed signal	signal nitude calculated using Euclidean norm []

Subject ID, values range from 1 to 30

Activity of **D**aily **L**iving (ADL) (1 value recorded): 1=Walking, 2=Walking.Upstairs, 3=Walking.Downstairs, 4=Sitting, 5= Standing

tBodyAcc-XYZ		body	Accelerometer	directional		raw	
BodyAcc-mean-X	Bodymotion.mean.along.Xaxis	mean of body movement along the X axis for an ADL based on raw data					
BodyAcc-mean-Y	Bodymotion.mean.along.Yaxis	mean of body movement along the Y axis for an ADL based on raw data					
BodyAcc-mean-Z	Bodymotion.mean.along.Zaxis	mean of body movement along the Z axis for an ADL based on raw data					
BodyAcc-std-X	Bodymotion.sd.along.Xaxis	standard deviation of body movement along the X axis for an ADL based on raw data					
BodyAcc-std-Y	Bodymotion.sd.along.Yaxis	standard deviation of body movement along the Y axis for an ADL based on raw data					
BodyAcc-std-Z	Bodymotion.sd.along.Zaxis	standard deviation of body movement along the Z axis for an ADL based on raw data					

tGravityAcc-XYZ

gravity   Accelerometer   directional   raw

GravityAcc-mean-X	UpDownmotion.mean.along.Xaxis	mean of body (up/down) movement along the X axis for an ADL based on raw data
GravityAcc-mean-Y	UpDownmotion.mean.along.Yaxis	mean of body (up/down) movement along the Y axis for an ADL based on raw data
GravityAcc-mean-Z	UpDownmotion.mean.along.Zaxis	mean of body (up/down) movement along the Z axis for an ADL based on raw data
GravityAcc-std-X	UpDownmotion.sd.along.Xaxis	standard deviation of body (up/down) movement along the X axis for an ADL based on raw data
GravityAcc-std-Y	UpDownmotion.sd.along.Yaxis	standard deviation of body (up/down) movement along the Y axis for an ADL based on raw data
GravityAcc-std-Z	UpDownmotion.sd.along.Zaxis	standard deviation of body (up/down) movement along the Z axis for an ADL based on raw data

tBodyAccJerk-XYZ

body   Accelerometer   directional   omnidirectional   raw

BodyAccJerk-mean-X	Bodymotion.multiplefoci.mean.along.Xaxis	mean of body (up/down) movement along the X axis and omnidirectional axis for an ADL based on raw data
BodyAccJerk-mean-Y	Bodymotion.multiplefoci.mean.along.Yaxis	mean of body (up/down) movement along the Y axis and omnidirectional axis for an ADL based on raw data
BodyAccJerk-mean-Z	Bodymotion.multiplefoci.mean.along.Zaxis	mean of body (up/down) movement along the Z axis and omnidirectional axis for an ADL based on raw data
BodyAccJerk-std-X	Bodymotion.multiplefoci.sd.along.Xaxis	standard deviation of body (up/down) movement along the X and omnidirectional axis for an ADL based on raw data
BodyAccJerk-std-Y	Bodymotion.multiplefoci.sd.along.Yaxis	standard deviation of body (up/down) movement along the Y and omnidirectional axis for an ADL based on raw data

BodyAccJerk-std-Z	Bodymotion.multiplefoci.sd.along.Zaxis	standard deviation of body (up/down) movement along the Z and omnidirectional axis for an ADL based on raw data
tBodyGyro-XYZ		body Gyroscope directional raw
BodyGyro-mean-X	BodyShift.mean.along.Xaxis	mean of body positional change along the X axis for an ADL based on raw data
BodyGyro-mean-Y	BodyShift.mean.along.Yaxis	mean of body positional change along the Y axis for an ADL based on raw data
BodyGyro-mean-Z	BodyShift.mean.along.Zaxis	mean of body positional change along the Z axis for an ADL based on raw data
BodyGyro-std-X	BodyShift.sd.along.Xaxis	standard deviation of body positional change along the X axis for an ADL based on raw data
BodyGyro-std-Y	BodyShift.sd.along.Yaxis	standard deviation of body positional change along the Y axis for an ADL based on raw data
BodyGyro-std-Z	BodyShift.sd.along.Zaxis	standard deviation of body positional change along the Z axis for an ADL based on raw data

Data Codebook of movement measures across activities of daily living (Walking (level, up or downstairs), sitting, standing, laying)

General definition of the variable or measure

More descriptive name of variable or measure   Description of the variable or measurement

Measurement		Movement type		Data transformations	
form of movement: [b]ody or [g]ravity	signal source: [g]yroscope or [a]accelerometer**	directional: direction of movement (axis X, Y or Z)	omnidirectional: derived from linear acceleration & linear velocity [Jerk]	raw[t*] or [f***]ourier transformed signal	signal nitude calculated using Euclidean norm []

			Measurement		Movement type		Data transformations	
tBodyGyroJerk-XYZ			body	Gyroscope	directional	omnidirectional	raw	
BodyGyroJerk-mean-X	BodyShift.multiplefoci.mean.along.Xaxis	mean of body positional change along the X axis and omnidirectional axis for an ADL based on raw data						
BodyGyroJerk-mean-Y	BodyShift.multiplefoci.mean.along.Yaxis	mean of body positional change along the Y axis and omnidirectional axis for an ADL based on raw data						
BodyGyroJerk-mean-Z	BodyShift.multiplefoci.mean.along.Zaxis	mean of body positional change along the Z axis and omnidirectional axis for an ADL based on raw data						
BodyGyroJerk-std-X	BodyShift.multiplefoci.sd.along.Xaxis	standard deviation of body positional change along the X axis and omnidirectional axis for an ADL based on raw data						
BodyGyroJerk-std-Y	BodyShift.multiplefoci.sd.along.Yaxis	standard deviation of body positional change along the Y axis and omnidirectional axis for an ADL based on raw data						
BodyGyroJerk-std-Z	BodyShift.multiplefoci.sd.along.Zaxis	standard deviation of body positional change along the Z axis and omnidirectional axis for an ADL based on raw data						

Data Codebook of movement measures across activities of daily living (Walking (level, up or downstairs), sitting, standing, laying)

General definition of the variable or measure

Revisted descriptive name of measure

			Measurement		Movement type		Data transformations	
			form of movement: [b]ody or [g]ravity	signal source: [g]yroscope or [a]accelerometer**	directional: direction of movement (axis X, Y or Z)	omnidirectional: derived from linear acceleration & linear velocity [Jerk]	raw[t*] or [f***]ourier transformed signal	signal nitude calculated using Euclidean norm []
tBodyAcc			body	Accelerometer			raw	yes

BodyAccMag-mean	Bodymotion.mean	mean of body movement along the Z axis for an ADL with Euclidean norm transformation of nitude				
BodyAccMag-std	Bodymotion.sd	standard deviation of body movement along the Z axis for an ADL with Euclidean norm transformation of nitude				
tGravityAcc		gravity	Accelerometer		raw	yes
GravityAccMag-mean	UpDownmotion.mean	mean of up/down movement for an ADLwith Euclidean norm transformation of nitude				
GravityAccMag-std	UpDownmotion.sd	standard deviation of up/down movement for an ADL with Euclidean norm transformation of nitude				
tBodyAccJerk		body	Accelerometer	omnidirectional	raw	yes
BodyAccJerkMag-mean	Bodymotion.multiplefoci.mean	mean of bodily movement for an ADL of omnidirectional change wit Euclidean norm transformation of nitude				
BodyAccJerkMag-std	Bodymotion.multiplefoci.sd	standard deviation of bodily movement for an ADL of omnidirectional change wit Euclidean norm transformation of nitude				
tBodyGyro		body	Gyroscope		raw	
BodyGyroMag-mean	BodyShift.mean	mean of body positional movement for an ADL based upon raw data				
BodyGyroMag-std	BodyShift.sd	standard deviation of body positional movement for an ADL based upon raw data				
tBodyGyroJerk		body	Gyroscope		raw	
BodyGyroJerkMag-mean	BodyShift.multiplefoci.mean	mean of bodily omnidirectional body shift movement movement for an ADL based upon raw data				
BodyGyroJerkMag-std	BodyShift.multiplefoci.sd	standard deviation of bodily omnidirectional body shift movement for an ADL based upon raw data				

Data Codebook of movement measures across activities of daily living (Walking (level, up or downstairs), sitting, standing, laying)

General definition of the variable or measure

More descriptive name of variable or measure   Description of the variable or measurement

		Measurement		Movement type		Data transformations	
		form of movement: [b]ody or [g]ravity	signal source: [g]yroscope or [a]accelerometer**	directional: direction of movement (axis X, Y or Z)	omnidirectional: derived from linear acceleration & linear velocity [Jerk]	raw[t*] or [f***]ourier transformed signal	signal nitude calculated using Euclidean norm []
BodyAcc-XYZ		body	Accelerometer	directional		fourier	
BodyAcc-mean-X	Bodymotion.mean.along.Xaxis	mean of bodily movement along the X axis for an ADL based upon fourier transformed signal					
BodyAcc-mean-Y	Bodymotion.mean.along.Yaxis	mean of bodily movement along the Y axis for an ADL based upon fourier transformed signal					
BodyAcc-mean-Z	Bodymotion.mean.along.Zaxis	mean of bodily movement along the Z axis for an ADL based upon Fourier transformed signal					
BodyAcc-std-X	Bodymotion.sd.along.Xaxis	standard deviation of bodily movement along the X axis for an ADL based upon Fourier transformed signal					
BodyAcc-std-Y	Bodymotion.sd.along.Yaxis	standard deviation of bodily movement along the Y axis for an ADL based upon Fourier transformed signal					
BodyAcc-std-Z	Bodymotion.sd.along.Zaxis	standard deviation of bodily movement along the Z axis for an ADL based upon Fourier transformed signal					
BodyAccJerk-XYZ		body	Accelerometer	directional		Fourier	

BodyAccJerk-mean-X	Bodymotion.multiplefoci.mean.along.Xaxis	mean of omnidirectional bodily movement along the X axis for an ADL based upon Fourier transformed signal	
BodyAccJerk-mean-Y	Bodymotion.multiplefoci.mean.along.Yaxis	mean of omnidirectional bodily movement along the Y axis for an ADL based upon Fourier transformed signal	
BodyAccJerk-mean-Z	Bodymotion.multiplefoci.mean.along.Zaxis	mean of omnidirectional bodily movement along the Z axis for an ADL based upon Fourier transformed signal	
BodyAccJerk-std-X	Bodymotion.multiplefoci.sd.along.Xaxis	standard deviation of omnidirectional bodily movement along the X axis for an ADL based upon Fourier transformed signal	
BodyAccJerk-std-Y	Bodymotion.multiplefoci.sd.along.Yaxis	standard deviation of omnidirectional bodily movement along the Y axis for an ADL based upon Fourier transformed signal	
BodyAccJerk-std-Z	Bodymotion.multiplefoci.sd.along.Zaxis	standard deviation of omnidirectional bodily movement along the Z axis for an ADL based upon Fourier transformed signal nitude	

Data Codebook of movement measures across activities of daily living (Walking (level, up or downstairs), sitting, standing, laying)

General definition of the variable or measure

More descriptive name of variable or measure   Description of the variable or measurement

	Measurement		Movement type		Data transformations	
	form of movement: [b]ody or [g]ravity	signal source: [g]yroscope or [a]accelerometer**	directional: direction of movement (axis X, Y or Z)	omnidirectional: derived from linear acceleration & linear velocity [Jerk]	raw[t*] or [f***]ourier transformed signal	signal nitude calculated using Euclidean norm []
BodyGyro-XYZ	body	Gyroscope	directional		Fourier	

BodyGyro-mean-X	BodyShift.mean.along.Xaxis	mean of body shift change along the X axis for an ADL based upon raw data					
BodyGyro-mean-Y	BodyShift.mean.along.Yaxis	mean of body shift change along the Y axis for an ADL based upon raw data					
BodyGyro-mean-Z	BodyShift.mean.along.Zaxis	mean of body shift change along the Z axis for an ADL based upon raw data					
BodyGyro-std-X	BodyShift.sd.along.Xaxis	standard deviation of body shift change along the X axis for an ADL based upon raw data					
BodyGyro-std-Y	BodyShift.sd.along.Yaxis	standard deviation of body shift change along the Y axis for an ADL based upon raw data					
BodyGyro-std-Z	BodyShift.sd.along.Zaxis	standard deviation of body shift change along the Z axis for an ADL based upon raw data					
BodyAcc		body	Accelerometer			Fourier	
BodyAccMag-mean	Bodymotion.mean	mean of unspecified bodily movement movement for an ADL based upon raw data					
BodyAccMag-std	Bodymotion.sd	standard deviation of unspecified bodily movement movement for an ADL based upon raw data					
BodyAccJerk		body	Accelerometer		omnidirectional	Fourier	yes
BodyBodyAccJerkMag-mean	BodyBodymotion.multiplefoci.mean	mean of bodily omnidirectional bodily movement movement for an ADL based upon Fourier transformed nitude signals					
BodyBodyAccJerkMag-std	BodyBodymotion.multiplefoci.sd	standard deviation of bodily omnidirectional bodily movement movement for an ADL based upon Fourier transformed nitude signals					
BodyGyro		body	Gyroscope			Fourier	yes
BodyBodyGyroMag-meanFreq	BodyBodyShift.meanFreq	mean frequency of reported frequencies of body shift change movement for an ADL based upon Fourier transformed nitude signals					

BodyGyroJerk		body	Gyroscope	omnidirectional	Fourier	yes
BodyBodyGyroJerkMag-mean	BodyBodyShift.multiplefoci.mean	mean of omnidirectional body shift change movement for an ADL based upon Fourier transformed nitude signals				
BodyBodyGyroJerkMag-std	BodyBodyShift.multiplefoci.sd	standard deviation of omnidirectional body shift change movement for an ADL based upon Fourier transformed nitude signals				
angle.BodyAccMean,gravity.						
angle.BodyAccJerkMean.,gravityMean.						
angle.BodyGyroMean,gravityMean.						
angle.BodyGyroJerkMean,gravityMean.	**Component variables modifying other variables used in the signal averaging process**					
angle.X,gravityMean.						
angle.Y,gravityMean.						
angle.Z,gravityMean.						

mean()   mean or average measurement movement for an ADL used to estimate from each signal

std()   standard deviation movement for an ADL or square root of sum of squared differences from the mean from each signal

* t stands for time domain signals captured at a constant rate of 50 Hz and filtered using a median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz to remove noise

** the acceleration signal was then separated into body and gravity acceleration signals (tBodyAcc-XYZ and tGravityAcc-XYZ) using another low pass Butterworth filter with a corner frequency of 0.3 Hz.

***a Fast Fourier Transform (FFT) was applied to some of these signals producing BodyAcc-XYZ, BodyAccJerk-XYZ, BodyGyro-XYZ, BodyAccJerk, BodyGyro, BodyGyroJerk. (Note the 'f' to indicate frequency domain signals).