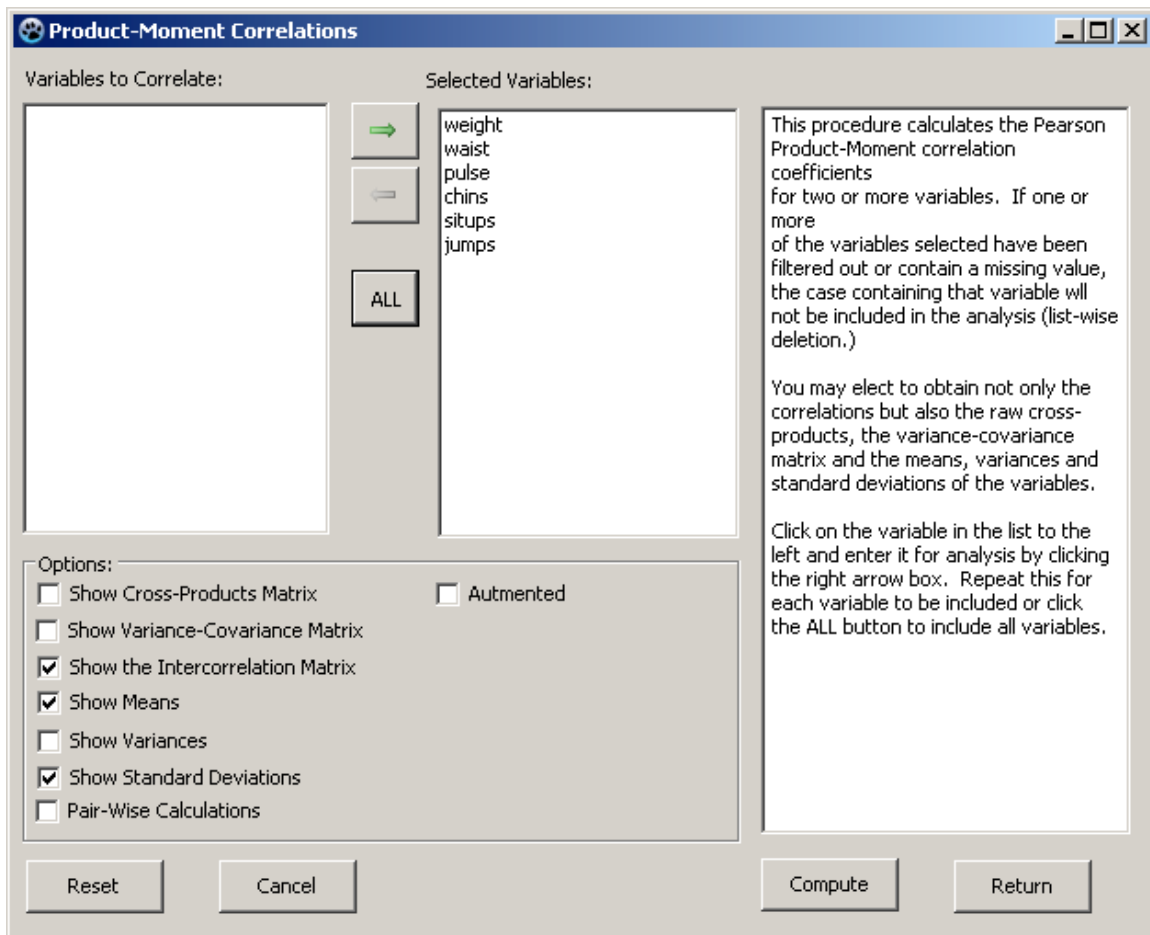


## THE PRODUCT-MOMENT CORRELATIONS

The Pearson Product-Moment correlation is an index of the linear relationship between two variables that ranges from  $-1$  to  $1$ . If two variables (X and Y) consist of values sampled from a population of values, then one can test whether or not the obtained coefficient departs from zero beyond that expected due to random sampling variability alone. It should be noted that this is a linear relationship. It is possible to have two variables that are related in a curvilinear manner and still obtain a linear correlation of  $0.0$ .

Correlation matrices consist of the product-moment correlation among 2 or more variables. These matrices are often the “heart” of many multivariate analyses including factor analysis, discriminant function analysis, path analysis, etc.

To demonstrate the procedure for the product-moment correlations we will use the `cansas.LAZ` file. You will have the option to obtain the correlation for each pair in a “pair-wise” manner or (the default) for all cases without missing values. The pair-wise option may result in a different sample size for the correlation because of missing values in various cases. Here then is the dialog form for obtaining the results:



When you click the Compute button you obtain:

Product-Moment Correlations Matrix with 20 cases.

Variables	weight	waist	pulse	chins	situps
weight	1.000	0.870	-0.366	-0.390	-0.493

waist	0.870	1.000	-0.353	-0.552	-0.646
pulse	-0.366	-0.353	1.000	0.151	0.225
chins	-0.390	-0.552	0.151	1.000	0.696
situps	-0.493	-0.646	0.225	0.696	1.000
jumps	-0.226	-0.191	0.035	0.496	0.669

Variables

	jumps
weight	-0.226
waist	-0.191
pulse	0.035
chins	0.496
situps	0.669
jumps	1.000

Means with 20 valid cases.

Variables	weight	waist	pulse	chins	situps
	178.600	35.400	56.100	9.450	145.550

Variables	jumps
	70.300

Standard Deviations with 20 valid cases.

Variables	weight	waist	pulse	chins	situps
	24.691	3.202	7.210	5.286	62.567

Variables	jumps
	51.277