Abstract: The presented thesis deals with the use of MR spectroscopy methods for the study of heart metabolism, namely the determination of the lipid content in the heart tissue. The aim of the thesis was the optimization of the examination protocol for the use in the routine examination of patients. The heart examination by means of MR spectroscopy is due to movements caused by the heart rhythm and breathing very challenging. We have, therefore, proposed the measurement protocol, when the measurement is controlled both by ECG signal and the signal monitoring breathing of the examined subject. To achieve sufficient quality of MR spectra we also proposed the use of an advanced method (GREshim) for the adjustment of the homogeneity of the static magnetic field. Using the optimized examination protocol we have examined a group of 14 healthy volunteers. An average content of lipids in the myocardium equal to 0,7 % as determined from the performed measurements is in agreement with published data.