Chart 1 - *Profile of the selected studies*

Author / year	**Sample (N and sex)**	**Analysis method**	**Myokines analyzed / Type of exercise**
Bugera *et al.* (2018)	N = 9 M; 18-35 years old; physically active, (at least 1 year in resistance training).	Human ELISA Kit KHC0061, Thermo Fisher Scientific, Waltham, WA, EUA;	IL-15 Bilateral knee extension Exercise with and without blood flow restriction
Oliver *et al.* (2016)	N = 10 W; 27 ± 4 years old; healthy, trained in resistance training.	R&d custom Premixed magnetic bead-based multiplex kit, fcstm14-02 (R&D Systems, Minneapolis MN).	IL-6 e IL-15 Squat
Sanchis-Gomar *et al.* (2015)	N = 15 H; 27 ± 5 years ol; Professional Soccer Players.	CSB-EL007669HU, Cusabio, Wuhan, China e EIAAPC, RayBiotech, Norcross, GA, EUA; respectivamente**.**	Alepin A soccer session.
Wahl *et al.* (2015)	N = 13; 24,8 ± 3,7 years old; healthy, non-smokers.	Quantikine HS ELISA-HS600B, R&D Systems, Minneapolis MN	IL-6 e BDNF Cycloergometer
Carvalho *et al.* (2018)	N = 61 (30W; 31M); 20-45 years old; Sedentary with BMI and obese individuals.	Enzyme-linked immunosorbent assay (ELISA); Quantikine human immunoassays (R&D Systems, Minneapolis MN).	Myostatin Maximum treadmill test; Evaluation of strength and resistance in isokinetic equipment
Fortunato *et al.* (2018)	N = 20 M; Healthy; 18-35 years old; TG and UTG in resistance training.	Hmyomag-56k milliplex® map e luminex®	Apelin e BDNF Leg press, knee extension and leg flexion
Hittel *et al.* (2010)	N = 10 M; 40-60 years old; overweight an hyperinsulinemic (BMI = 27.9).	ELISA Kit	Myostatin Moderate aerobic exercise
Pérez-Lopez *et al.* (2018)	N = 14; 18-35 years old; trained in resistance training (at least one year).	ELISA kit (r&d systems, minneapolis, mn, usa)	IL-15 Leg press

Zembron-Lacny *et al.* (2010)	N = 16 M; 20,7 ± 0,9 years old; Not trained, physically active.	Enzyme immunoassay commercial kits (R&D Systems, Minneapolis MN).	IL-6 Treadmill + Treamill 10% inclined
Hjorth *et al.* (2016)	N = 24 M; 40-65 years old; Sedentary, CG (n = 13) normal blood glucose and dysglycemic (n=11).	Taq-man assays applied biosystems	Myostatin Cycloergometer; Resistance Training
Kerschan-Schindl *et al.* (2015)	N = 19 (18M; 1W); 41-48 years old; ultramarathon athletes	Colorimetric competitive immunoassay, immundiagnostik; bensheim, Germany.	Myostatin ultramarathon
Tamura *et al.* (2011)	N = 13 M; Healthy, untrained, physically active.	Human IL-15 quantiglo ELISA Kit, R&D Systems, Minneapolis, MN.	IL-15 Treadmill

BMI = body mass index; CG = Control Group; DG = Dysglycemic group; M = men; MR = maximum repetition; VO_2 = maximum oxygen consumption; TG = Trained Group; UTG Untrained Group = Grupo não treinado); W = women

Chart 2- *Biological responses to physical training*

Author / year	Exercise applied / Training	Weekly frequency	Biological responses to exercise / training	Conclusion
Bugera *et al.* (2018)	Bilateral knee extension. BFR-RE:30 reps at 30% 1MR + 3 sets of 15 reps, with 30s of interval HL-RE: 4 sets of 7 repetitions com 1' interval between series at 80% of 1 ME LL-RE: replication of BRF-RE but without blood flow restriction.	1 session; cross-sectional study.	IL-15 did not show* difference between exercise protocols neither 1h and 23 post exercise	There was no difference in the concentration of IL-15 post-exercise in any of the groups.
Oliver *et al.* (2016)	4 sets of 10 reps at 70% of 1 MR. TRD: 180s intra ser interval. Cluster: 30s interval intra reps and 150s intra sets.	1 session; cross-sectional study.	There was no ↑ * to IL-15 or IL-6 under any conditions and at any time	There was no ↑ * of myokines IL-15 and IL-6
Sanchis-Gomar *et al.* (2015)	A competitive soccer session (from January to May)	6 months; longitudinal study;	In the competitive period (January-March) there was ↑ * of apelin from 341.8 ng / mL to 433.3 ng / mL. However, on	The follow-up to a season of professional football

			returning from vacation (May-July) no changes * were found.	showed ↑ * of apelin only in the competitive period and there was no correlation with performance
Wahl *et al.* (2015)	3 Conditions: A = Cycling (C); B = cycling and electrostimulation (C + E); C = electrostimulation (E). 60 Min / 70% of peak power.	1 session; cross-sectional study	C + E and E ↑ * IL-6 levels at times, 0’, 30’ and 60 ’after EF. 30´ after C + E the values of IL-6 ↑ * compared to C. The levels of IL-6 ↓ * at moments 0´, 30´ and 60´ after E compared to C + E and C. C + E and C ↑ * BDNF at 0´ after exercise compared to pre. BDNF levels ↑ * at times 0´ and 30´ after E compared to C + E and C. 240´ after exercise C + E ↑ * compared to C.	IL-6 showed higher ↑ after C + E followed by C and E. Serum BDNF levels were * higher in C and C + E, while E induced non-changes *.
Carvalho *et al.* (2018)	1 min concentric knee extension and 5 sec isometric extension in a dynamometer. Isokinetic test set at 70º with a speed of 60º/s, for the isometric test the fixed position was 60º.	1 session; cross-sectional study	Normal weight group; Obese healthy group; Obese unhealthy group. Myotastin was considered elevated only in unhealthy obese individuals, Women had higher values than men for myostatin myostatin had a weak positive * correlation with metabolic syndrome (r = 0.26); Insulin levels (r = 0.25) and TNF a (r = 0.39), and negative associations with adiponectin (r = 0.40 and insulin sensitivity (r = 0.27)	Myostatin levels can be used to identify unhealthy phenotypes in young adults with obesity

Fortunato *et al.* (2018)	4 sets of leg press, knee extension and leg flexion at 65% of 1MR, with 90s of recovery	1 session; cross-sectional study	Two groups: (GNT) and the trained group (GT). Strength training ↑ * levels of apelin in the GNT at the times 2 hours after and 24 hours after, the brain-derived neurotrophic factor (BDNF) ↑ * only in the GT at the time immediately after.	An acute session of strength training increased * levels of apelin and BDNF levels
Hittel *et al.* (2010)	Moderate aerobic training 40-55% VO2máx (treadmill, elliptical and bicycle) 9 months total (3 months of adaptation and 6 of training)	9 months; longitudinal study	A negative correlation was found in the pre-workout between myostatin and insulin sensitivity (r2 = -0.82). After training, this correlation was (r2 = 0.49) Myostatin ↓ * from 28.7 ± 3.1 to 22.8 ± 2.0 ng / mL with aerobic exercise	Myostatin levels decreased after 6 months of aerobic training.
Pérez-López *et al.* (2018)	Bilateral leg resistance exercise: 4 sets of leg press and 4 sets of knee extension in the extension chair at 75% of 1RM until concentric failure.	1 session; cross-sectional study	Serum IL-15 ↑ * at ~ 5.3 times after EF. IL-15 concentration was negatively correlated with muscle strength in the leg press (r = -0.80) and the extension chair (r = -0.63)	The signaling of IL-15 and its IL-15 receptor is activated in response to a single session of ER, increasing * the concentration of IL-15 post-exercise.
Zembron-Lacny *et al.* (2010)	Ex.1: 90 'running at 65% VO_2máx and then at Ex.2: 90' running at 65% VO2máx, 15 'eccentric phase. The period between Ex.1 and Ex.2 was 3 months.	1 session; cross-sectional study	↑* IL-6 in the eccentric phase. IL-6 correlated with NO concentration after Ex.2 (r = 0.66).	Eccentric contraction is an important factor in increasing the concentration of cytokines considering that in the eccentric

				phase, IL-6 levels increased *.
Hjorth *et al.* (2016)	12 weeks of training in healthy individuals with supervised dysglycemia with 2 sessions / week of interval cycling (60 ') and 2 sessions / week of full body strength training (60'). Before and after the 12 weeks of training, a test was performed on the bicycle, lasting 45 minutes at 70% of VO2máx measured before, shortly after and 2h after the two tests	Longitudinal study Aerobic training 2x / week; Resistance training 2x / week;12 weeks;	Plasma concentration of myostatin ↓ * in 7.5% after 12 weeks of training Myostatin expression correlated positively with fast-acting fibers (r = 0.53) and negatively with slow-acting fibers (r = -0.52) There was a negative correlation between myostatin expression in the muscle and insulin sensitivity (r = -0.53)	Myostatin expression in muscle correlated with impaired insulin sensitivity
Kerschan-Schindl *et al.* (2015)	Ultramarathon (246 km); Venous blood collection 3 times: the day before the test, 15 'after the end of the test and 3 days after the test.	Ultramarathon; cross-sectional study	Average levels of myostatin ↑ * post-test compared to pre-test levels. Average pre-test levels: 23.73 (ng / ml); Average post-test levels: 26.73 (ng / ml)	Increased serum myostatin levels appear to reflect muscle catabolism induced by extreme exercise.
Tamura *et al.* (2011)	30 min on the treadmill at 70% of HRmax.	1 session; cross-sectional study	The serum concentration of IL-15 ↑ * in 10 'after the 30' run on the treadmill compared to pre-exercise levels. IL-15 concentration returned to baseline after 3 hours.	Extreme high-intensity exercise does not seem to be necessary to increase circulating levels of IL-15.

*Significant differences; BFR = Blood flow resistance; BFR-RE = exercise with blood flow restriction; BDNF = Brain derived neurotrofic factor; BMI = body mass index; C = Cycling CLU = Cluster Test; E = Electro-stimulation; GNT = group non-trained; HL-RE = High load resistance exercise; HRmax = maximun heart rate; IL-6 = Interleukin-6; IL-15 = Interleukin-15; LL-RE = low load resistance exercise; pg/Ml = Picogram per milliliter; ng/mL = Nanogram per milliliter; NO = Nitric Oxide; TNFα = Tumor Necrosis Factor alfa; VO_2 = oxygen consumption. HRmax = maximum heart rate; YAU = Yukon arctic ultra