

GETMA ACADEMY AND GROUP-PRICE DIFFERENTIATION

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Chief Master Kiera Lee and Senior Master Ryan Lee had studied and taught Taekwondo for more than 35 years combined. They were both highly respected members of the American Taekwondo Association (ATA). Chief Master Lee was an 8th Degree Black Belt, a senior ranking member of the ATA, and a trainer of all forms of combat weapons. Senior Master Lee was a 7th Degree Black Belt and a senior ranking tournament coordinator and judge. He was a coach and advisor to the US Olympic Taekwondo team. Together, the Lees owned Geonganghan (Healthy) Taekwondo Martial Art (GETMA) Academy in Tampa, Florida. Initially the school was located in a strip mall, but five years later, it re-located to a new free-standing building in an industrial park in the Tampa Bay area. Since opening in the new location, the academy was thriving in terms of number of students, but revenues were below expectations.

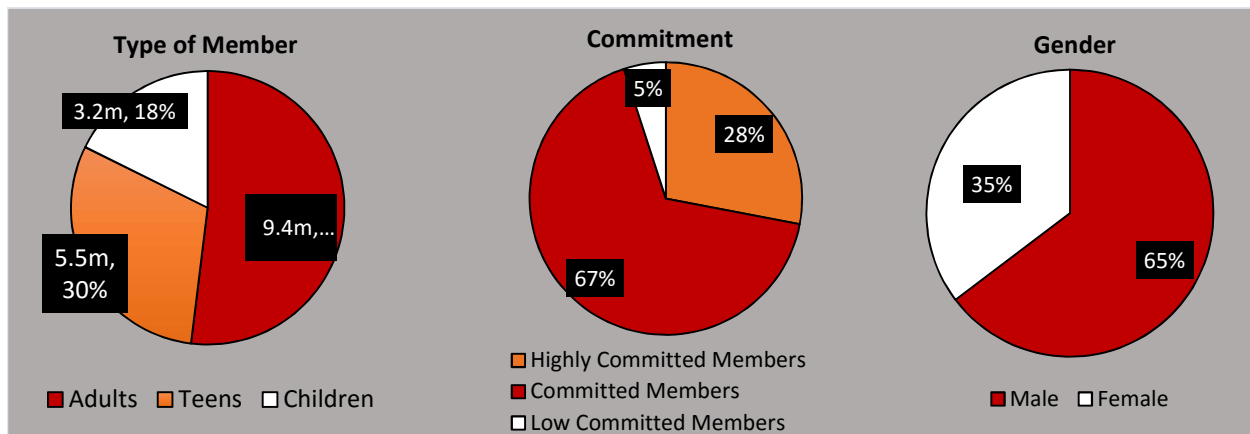
The Lees were concerned about the long-term viability of the school, and wanted to know how to improve the financial outlook of their business. Senior Master Lee approached Mark Polatz, a dedicated and committed member of the GETMA family, who recently completed an MBA degree, to discuss the school's financial position. After reviewing all pertinent information, Polatz prepared a business report for the Lees' evaluation and approval.

The Martial Arts Industry

In 2015, the martial arts industry was thriving in the U.S. Instruction of karate, kendo, judo, jiu jitsu, taekwondo, and mixed martial arts (MMA) was a \$4 billion-a-year revenue industry, with average annual growth of 5.3% in the period 2011–2015 (Diment 2016). It was estimated that the industry would continue growing at a conservative rate of 4% over the next 5 years.

Figure 1. Martial Art Industry Demographics

Source: Authors' Calculations Using Data from Moore (2011) and Diment (2016).



Note: Highly committed member = students attending at least three times per week. Committed member = students attending at least two times per week. Low commitment member = student attending less than two time per week.

The demand for martial arts instruction was driven by two main factors: income and preference. As the U.S. economy recovered from the 2008–2009 recession, families experienced more disposable income for recreation and sports. At the same time, several MMA fights reached more than 1.8 million viewers, corroborating the increasing popularity of this type of sport (Holland 2017).¹ In 2015, more than 18 million Americans studied martial arts, and over half of those students were adults (Figure 1). From this group, 28% studied martial arts “every chance they get” and were committed members of a school, eager to earn

¹ Other factors explaining the market demand for martial arts are related to interest in cultural exchange, mental control, physical fitness, and self-defence (Ko and Pastore, 2005).

Black Belt ranks. The remaining 72% were members that participated about twice a week, and viewed martial arts schools as another form of gym or sport club. More specifically, Kim et al. (2009) and Ko and Pastore (2005) found that long-term members of martial art schools were interested in the expertise and quality of instruction, while new customers were concerned about flexible payments, reasonable membership fees, and flexible refunds and cancellations.

Considered a highly competitive industry, more than 67,200 martial arts studios and schools operated in the U.S. (Diment 2016). There were low barriers to entry, since capital costs were low, specialized equipment was marginal, and a qualified labor force was reasonably available. Most of these businesses were small schools serving local markets, and those with highly ranked trainers fostered a group of loyal students. This was the case in Tampa, Florida, where well-known trainers in MMA and Taekwondo opened Martial Arts studios (see Appendix D).

Geonganghan (Healthy) Taekwondo Martial Arts Academy

Senior Master Lee reached out to Mark Polatz, a committed GETMA Academy student with a business background, to assist him with business alternatives to achieve long-term financial sustainability of the school. Polatz set out to evaluate all aspects of the operation, including competitors near the Tampa Bay area, revenues, and cost structure. Due to the loyalty observed among a group of GETMA students, Polatz believed that prices could be safely raised without significantly affecting student retention rates. The problem was to determine a new set of prices under this highly competitive environment. The means of resolving the dilemma was to verify the different groups of students attending martial arts schools, and estimate their demand structures and price-elasticities per group.

The GETMA Academy had two types of students: affiliated and unaffiliated members. An affiliated member had studied for more than two years, and attended classes at least three times per week. An unaffiliated member was new to martial arts training, or attended classes irregularly (Figure 2 provides information about GETMA Academy members.) Polatz noticed

that unaffiliated members (those in Groupon and Basic memberships) were more fluctuating throughout the year than affiliated members (Advanced, Leader, and Heritage memberships). For instance, the number of students in Groupon dropped from 25 in January to six in March, and increased to 12 in May, while the Leader group was steady throughout the year at around 10 students (see Figure 2). In addition, he found that 80% of the students under Advanced membership were affiliated members. That is, the GETMA Academy had a ratio of 73% of affiliated-to-total members, a value significantly above the industry's ratio of 28% (Figure 1), and above the taekwondo schools' ratio of 50% (Kim et al. 2009).

Polatz conjectured that affiliated members displayed less price-elastic demand, that is, they were less sensitive toward price changes than were unaffiliated members. Affiliated members recognized and valued the high quality of instruction. However, GETMA Academy offered similar prices for all types of members (see Figure 2). There were two available choices: (1) \$95 and the right to attend a maximum of two classes per week (except Groupon students, who paid \$60 for the first month), or (2) \$120 and the right to attend any day of the week. The GETMA Academy was open six days a week. About 90% of the unaffiliated members chose option (1), 80% of the Advanced members chose option (2), and 100% of Leader and Heritage members chose option (2); verifying the high proportion of affiliated members in the school.

GETMA Academy financials were in good order (see Appendix A). The monthly number of students was almost at the full capacity of 130. There were no full-time employees, and thus, most costs were deemed as fixed costs, such as mortgage, utilities, insurance, and franchise fees. Appendix B compares ratios between the industry and the GETMA Academy. The school showed some advantages regarding variable costs (Industry wages = 34%, GETMA wages = 17.1%), but it also displayed higher fixed costs than those observed in the industry. Polatz considered that GETMA's costs and marketing strategy were in line with the industry's figures; thus, the analysis should focus on pricing.

Figure 2. GETMA Affiliated and Nonaffiliated Members

Source: Owners' Information

	Price	Jan-15	Mar-15	May-15	Jul-15	Sep-15	Dec-15	2015 Average
Groupon	\$60.00	25	6	12	11	10	5	15
Basic Membership	\$102.00	18	20	16	24	12	14	18
Advanced Membership	\$116.00	70	70	70	74	74	70	71
Leader Membership	\$120.00	10	10	10	11	10	12	11
Heritage Membership	\$120.00	5	5	5	5	6	6	5
Total Member Count		128	111	113	125	112	107	120

Note: Selective months in 2015. Price = average monthly membership fee per group. For example, 90% of Basic members paid \$100, while 10% paid \$125. Customers under "Groupon" and "Basic" memberships were considered unaffiliated members. "Advanced", "Leader", and "Heritage" memberships were affiliated members. Groupon's price included only one month; afterward, the member paid the Basic membership fee.

Group-Price Differentiation Strategy

A "reservation price" was the maximum dollar value each consumer was willing to pay for a product or service. In most cases, consumers paid market value, which was below their reservation price, producing a consumer surplus. Ideally, a firm would estimate the reservation price for each of its customers and charge a price just below that value, capturing most of the consumer surplus. GETMA might not be able to determine each customer's reservation price, but it could engage in *group-price differentiation*, also known as *third-degree price discrimination*. That is, customers could be divided into two or more groups according to their price-elasticities. Then, the academy could set different prices for each group using a costly-efficient procedure. This strategy worked when a firm could identify groups with different reservation prices, and could prevent resale of the product or service.

Polatz's first step was to estimate the demand for martial arts training in the Tampa Bay area. Information from a sample of 10 martial art schools near the area delivered the following conclusions:²

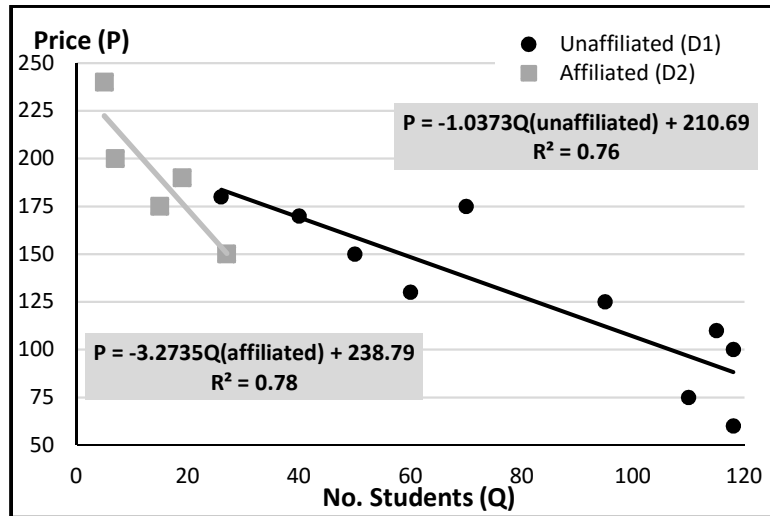
- (1) Out of the 10 schools surveyed, eight did not provide a list of printed or online prices. Prices were provided verbally, which implied that schools in the area were using some form of price-differentiation, bundle-pricing, optional-price strategies, or a combination.
- (2) On average, 62% of members in these schools were classified as "unaffiliated members." They were training for fewer than two years, or attended classes less than twice a week.
- (3) On average, 38% of members in these schools were classified as "affiliated members." That is, each was a highly committed student, with more than two years attending classes regularly, and with a sense of allegiance to the school.
- (4) In the case of the GETMA Academy, 73% of school members were considered affiliated members, a value significantly higher than enjoyed by competitors.

Using information from the 10 schools, Polatz calculated the demand equations corresponding to this area. Figure 3 provides the unaffiliated (D1) and affiliated (D2) demand curves and the corresponding equations.

² Appendix C provides detailed information about the data collected from the 10 martial arts schools in the Tampa Bay area. Several calls and visits were conducted to determine current prices per member and numbers of students. Some of the schools in the area were: Gracie PAC MMA (<http://www.gracietampasouth.com/>), Martial Arts Advantage (<http://martialartsadvantage.com/>), World Taekwondo USA (<http://www.worldtaekwondousa.com/>), Tampa Muay Thai (<http://www.tampamuaythai.com/kmt/>), Kowkabany's Family Martial Arts (<http://teamkowkabany.com/>), and TaeKwon-Do Center South Tampa (<http://www.southtampataekwondo.com/>).

Figure 3. Affiliated and Unaffiliated Demand Curves

Source: Authors' Calculations Based on Information in Appendix C



Note: Demand equations were calculated using regression analysis in Excel. R^2 values close to one provide evidence of good fitness of the equation.

Before making inferences about the results in Figure 3, Polatz knew that some limitations about the information needed to be addressed. Some martial arts schools and studios did not provide a printed or online list of prices; and the “entrance membership” fees, or an unaffiliated member price were provided by phone. In most cases, affiliated members’ fees were unavailable; thus, this information was obtained from former students, and not directly from the schools. In spite of these constraints, Figure 3 showed a clear difference in members’ sensitivity toward prices.

Using the demand equations found in Figure 3 and the GETMA Academy’s financial records, Polatz calculated the optimal prices in each of these market segments. Figure 4(a) shows that, on average, GETMA could maximize profits by setting a price of \$113.86 for unaffiliated members. Similarly, Figure 4(b) provides an optimal price of \$127.91 for affiliated members. Given these results, the GETMA Academy had an opportunity to increase prices in both groups without significantly affecting the number of memberships, thus, increasing profits.

After calculating optimal prices, Polatz was ready to present a final report to Chief Master Lee and Senior Master Lee. Polatz knew that the suggested monthly price for the unaffiliated group must be in the range of \$102 (current price for Basic membership) and \$114 (optimal price based on market demand D1.) Similarly, the monthly fee for the affiliated group must be in the range of \$116 (current price for Advanced membership) and \$128 (optimal price based on market demand D2). Polatz suggested a price of \$110 for Basic membership, and \$125 for Advanced membership (about 8% increase in both cases). The promotional price for Groupon should be kept at \$60 and Leader and Heritage membership prices should be increased to the same price as Advanced membership.³

³ Polatz did not calculate the demand curves for these groups. Thus, he recommended no changes in the prices of Groupon. He assumed that Leader and Heritage students were even less price-sensitive than Advanced students; and thus, the price could be raised to \$125.

Figure 4. Group-Price Differentiation and Optimal Prices

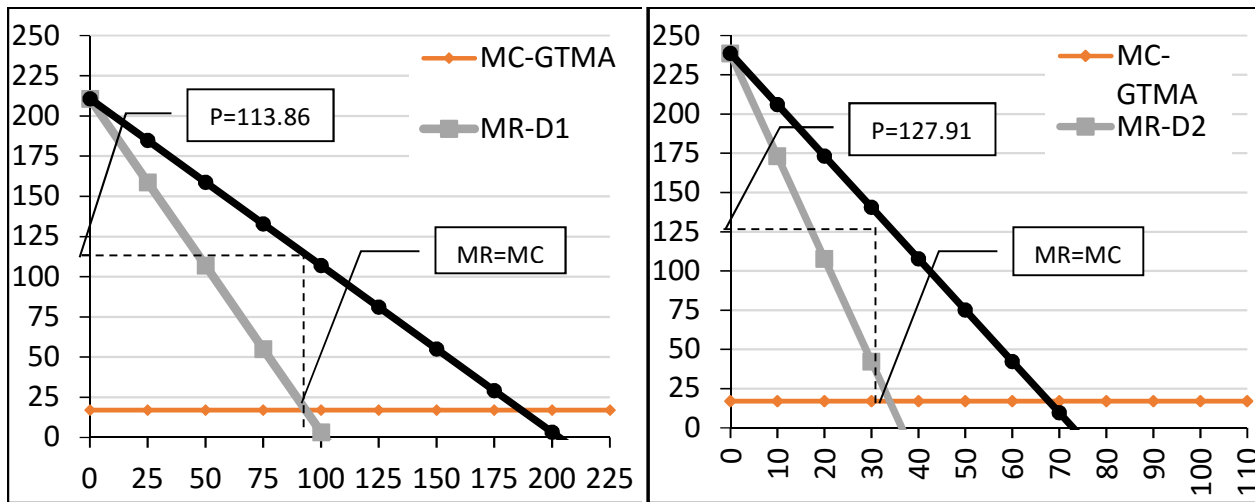


Figure 4(a)

Figure 4(b)

<p> $TR = P(\text{unaffiliated}) \times Q$ $TR = (-1.0373Q + 210.69)Q$ $= -1.0373Q^2 + 210.69Q$ $MR = \partial TR / \partial Q = -2.075Q + 210.69$ $MC = 17.04$ Maximizing Profit Condition: $MR = MC$ $-2.075Q + 210.69 = 17.04$ Optimal $Q = 93$ Optimal Price—unaffiliated members = \$113.86 </p>	<p> $TR = P(\text{affiliated}) \times Q$ $TR = (-3.2735Q + 238.79)Q$ $= -3.2735Q^2 + 238.79Q$ $MR = \partial TR / \partial Q = -6.547Q + 238.79$ $MC = 17.04$ Maximizing Profit Condition: $MR = MC$ $-6.547Q + 238.79 = 17.04$ Optimal $Q = 34$ Optimal Price—affiliated members = \$127.91 </p>
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Note: $P(\text{unaffiliated}) = -1.0373Q(\text{unaffiliated}) + 210.69$ and $P(\text{affiliated}) = -3.2735Q(\text{affiliated}) + 238.79$ came from Figure 3. Terms: Total Revenue (TR) = Price*members (Q); marginal revenue (MR) = first derivative of TR with respect to Q; marginal cost (MC) = change in total costs/change in number of students (see MC calculations in Appendix A).

Under this new set of prices, annual profits would increase from the current \$17,748 to a healthier \$28,055, taking the ratio of profits-to-revenue from 9.3 to 14% (Figure 5).

Figure 5. Suggested Pricing List and Profits

Source: Other Revenues and Total Costs Come from Appendix A and Owners' Information

	Current Prices			Polatz Recommendation		
	Price	No.	TR	Price	No.	TR
Groupon	60	15	910	60	15	910
Basic Membership	102	18	1,785	110	18	1,925
Advanced Membership	116	71	8,246	125	71	8,885
Leader Membership	120	11	1,260	125	11	1,313
Heritage Membership	120	5	640	125	5	667
Annual Figures						
Membership revenues	154,088			164,395		
Other revenues	36,219			36,219		
Total Revenues	190,307			200,614		
Total Costs	172,559			172,559		
Total Profits	17,748			28,055		
Profits-to-revenue	9.3%			14.0%		

Note: The suggested increase in prices was based on the optimal results found in Figure 4. For instance, the optimal price for unaffiliated members is \$113.86 and Polatz suggested a price of \$110. The number of students was the monthly average of students per group from Figure 2.

Conclusion

The GETMA Academy's prices were below the calculated market demand capacity, and the recommended prices by Polatz were conservative. He expected no changes in the current number of members. He recognized that this assumption might not hold given the proximity of alternative martial arts school in the area, but trusted that the GETMA Academy had a closely devoted group of members, who were able to recognize the higher quality of instruction. Polatz was also concerned about the sample size in constructing the demand equations.



Karla Borja is an Associate Professor of Economics in the School of Business at the University of Tampa, in Tampa, Florida. Dr. Borja is an active scholar currently exploring economic development issues in the region of Latin America. Dr. Borja is also consulting small businesses in the Tampa Bay area. From her collaboration with the business community, she has published several case studies on game theory and asymmetric information, screening devices in the labor market, and optimal pricing strategy. For detailed information on Dr. Borja's publications, go to her webpage at <http://www.ut.edu/KarlaBorja/>.



Christopher Miller is currently a graduate student at the University of Tampa, pursuing an MBA with a Concentration in Business Analytics. He completed his undergraduate degree in Economics at the University of Tampa in 2016.



Christopher Wettengel earned his Bachelor's degree in Business Administration with a major in Hotel & Restaurant Management from the University of Denver in 1993. He spent over 16 years as a manager in the restaurant business before starting his own business. After several years developing and managing his own business, he returned to work for Robert Half International as a Recruiting Manager. Today Christopher is a Regional Director of Recruiting for Goodwin Recruiting. Christopher earned his MBA from the University of Tampa in 2018.

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Appendix A
GETMA Financial Statements – 2015

Revenues (Sales)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Groupon	1,500	1,020	360	1,680	720	480	660	480	600	1,920	1,200	300
Basic Membership	1,836	1,530	2,040	1,224	1,632	2,856	2,448	2,652	1,224	1,020	1,530	1,428
Advanced Membership	8,120	8,352	8,120	8,004	8,120	8,584	8,584	8,352	8,584	8,120	7,888	8,120
Leader Membership	1,200	1,200	1,200	1,200	1,200	1,320	1,320	1,320	1,200	1,200	1,320	1,440
Heritage Membership	600	600	600	600	600	600	600	600	720	720	720	720
Equipment/clothing	950	865	650	650	725	950	975	850	675	700	650	550
Testing Fees	-	2,725	-	2,725	-	2,725	-	2,978	-	2,951	-	2,725
Special Events/Seminars	-	1,200	-	1,200	-	1,600	1,800	1,600	-	1,200	-	1,600
Total Revenue	14,206	17,492	12,970	17,283	12,997	19,115	16,387	18,832	13,003	17,831	13,308	16,883
Expenses	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Masters' wages	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100
Part-time trainer wages	767	610	420	681	570	767	750	680	465	688	646	390
ATA Fees	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750	1,750
Supplies	50	50	50	50	50	50	50	50	50	50	50	50
Maintainance	250	250	250	900	250	2,550	250	250	375	250	250	250
Car & transport	625	625	625	625	625	625	625	625	625	625	625	625
Advertising	600	-	-	560	-	-	600	-	-	-	-	640
Mortgage	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650
Telephone/Internet	65	65	65	65	65	65	65	65	65	65	65	65
Utilities	375	358	360	362	459	572	675	724	710	624	424	325
Insurance	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652	1,652
Taxes (real estate, etc.)	2,439	2,840	2,292	2,917	2,346	3,014	2,355	3,034	2,342	2,928	2,402	2,807
Interest	27	22	19	21	23	19	17	13	23	26	24	27
Total Costs	14,350	13,972	13,233	15,333	13,540	16,814	14,539	14,593	13,806	14,408	13,638	14,331
Net Profits	(144)	3,520	(263)	1,950	(543)	2,301	1,848	4,238	(803)	3,423	(330)	2,552
No. Students	128	119	111	124	113	126	125	122	112	128	120	107

Note: Total Cost (TC) = Fixed costs (FC) + Variable Costs (VC); VC = Part-time trainer wages. Thus, $TC = 13,135 + 17.04Q$, Q = number of students. The values in this equation represented the monthly average of FC and VC. MC = change in total costs per change in Q, or $MC = 17.04$. Source: Information provided by the owners of GETMA.

**Appendix B
Industry and GETMA Financial Ratios**

	Industry Ratios	KFMA Ratios
Profits-to-revenues	13.9%	9.3%
Wages-to-revenues	34.0%	17.1%
Rent+Utility-to-revenues	11.7%	26.2%
Marketing-to-revenues	2.5%	1.5%
Insurance-to-revenue	10.0%	10.4%

Notes: Industry = "Martial Art Studios in the US". This industry included establishments that offer instruction in martial arts, such as karate, kendo, judo, jiu jitsu, taekwondo, and mixed martial arts, among others in the U.S. Source: Diment (2016) and author’s calculations from data in Appendix 1.

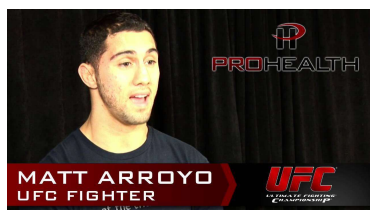
**Appendix C
Prices and Quantities from Martial Art Schools in the Tampa Bay Area**

Unaffiliated (D1)			Affiliated (D2)		
School	Price	No. Students	School	Price	No. Students
A	60	118	A	150	27
B	75	110	B	175	15
C	100	118	C	190	19
D	110	115	D	200	7
E	125	95	E	240	5
F	130	60			
G	150	50			
H	175	70			
I	170	40			
J	180	26			

Note: Data were collected from 10 martial arts schools in the Tampa Bay area. These schools were chosen based on proximity (20 miles radius from GETMA.) The 10 schools represent about 80% of all martial arts schools and academies near GETMA. Information was collected from schools’ owners, employees, or students. Some schools did not provide the number of members per month, thus, the authors calculated an approximate number based on the weekly schedule and average number of students per class. Some of the schools in the area were: Gracie PAC MMA (<http://www.gracietampasouth.com/>), Martial Arts Advantage (<http://martialartsadvantage.com/>), World Taekwondo USA (<http://www.worldtaekwondousa.com/>), Tampa Muay Thai (<http://www.tampamuaythai.com/kmt/>), Kowkabany’s Family Martial Arts (<http://teamkowkabany.com/>), and Tae Kwon Do Center South Tampa (<http://www.southtampataekwondo.com/>).

Appendix D

Some of the Leading Martial Arts Schools in Tampa, FL



Master Arroyo is a UFC veteran and was a semifinalist on the Ultimate Fighter Season 6 on Spike TV. He has been training for over 12 years. Master Arroyo won Abu Dhabi Combat Club East Coast US Trials in December 2014 and competed in the Olympics of Jiu Jitsu in Brazil 2015. He was also featured in the UFC Undisputed 2009 video game for Xbox and PlayStation.



MATT ARROYO'S
GRACIE TAMPA
SOUTH MMA

Master Arroyo teaches seminars all across the country and has co-wrote a book with Master Rob Kahn called the "BJJ Manifesto." They also produced a DVD Instructional series called the No Gi Library. Source: <http://www.gracietampasouth.com/>

Chief Master Laura Kowkabany and Sr. Master David Kowkabany are nationally recognized as one of the best husband and wife teaching teams in the country! Together, they have 75 years of martial arts training, and over 55 years experience in teaching children and adults.



In 2013, Chief Master Laura Kowkabany earned the title of Senior Master her current rank of 8th Degree Black Belt. After 40 years of training, she has been inducted into the ATA Hall of Fame. Senior Master

David Kowkabany is a State Champion in Weapons, and currently holds the position of international judge. In 2011, he earned his 7th Degree Black Belt, and in 2012, his current title of Senior Master. Source: <http://teamkowkabany.com/about-us/>



Kwan Jang-Nim Gerhard Brunner was born in Munich, Germany and has been practicing Tae-Kwon-Do for 37 years. He is currently a 7th Dan black belt and has been teaching for over 30 years. Master Brunner has gained international recognition and numerous awards throughout the years, including the Hall of Fame Award for Outstanding Traditional Leadership. After establishing nine schools in Germany he opened the first Traditional Tae-Kwon-Do Center in Tampa, Florida in 1997.

Source: [http://www.southtampataekwondo.com/about/master-](http://www.southtampataekwondo.com/about/master-brunner)



[brunner](#)